WASHINGTON'S

ENERGY STRATEGY

An Invitation to Action

January 1993

Washington Energy Strategy Committee
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Message from the Chairman

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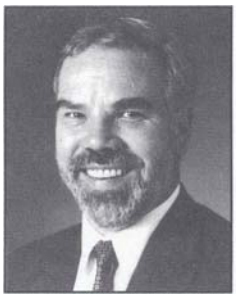
December 29, 1992



Dear Reader:

Washington State is faced with some urgent and difficult energy decisions. They will require significant investments of time and resources and, most importantly, broad understanding and consensus on what we need to do and why. With this in mind, the 1991 Washington State Legislature instructed the governor to appoint a group of twenty citizens and public officials to recommend a strategy that would assure us of adequate, economic, and reliable energy while protecting the quality of our environment.

This energy strategy is the result. It is the Committee's report, and it reflects differences of opinion. But the differences are overwhelmed by valuable consensus and strong direction on where we should go and how. None of this could have been done without exceptional voluntary effort on the part of many individuals-by Committee members, by members of the public who attended meetings and provided valuable comments, by experts who made presentations at working sessions, and by the staff of the Washington State Energy Office.

This report serves as the Energy Office's 1993 biennial report to the legislature. We hope it serves the legislature, Governor, and citizens of the state well.

Sincerely yours,

Jim Waldo

Chair,
Washington State Energy Strategy Committee

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Key Terms and Acronyms

Key Terms

Biomass: The total biological matter, or stored energy content of living or dead organisms, existing in a given specified volume or area.

Carbon taxes: Taxes applied to a fuel based on its carbon content. These taxes are designed to reflect the environmental impact of the greenhouse gases produced when the fuel is burned.

Cogeneration: Using the heat incidentally generated by one process to accomplish another task. For example, in a gas-fired electricity generating plant, the heat not converted to electricity could be used as steam for food processing.

Demand-side resources: Conservation or efficiency measures. Energy savings can be considered a resource in the sense that they make it possible to serve increased demand without obtaining new supplies.

District heating: Using a centralized steam plant to deliver hot water and space heat to clusters of users, e.g., college campuses and industrial parks.

Firm power: The portion of a customer's energy load for which service is assured by the utility provider.

Fossil fuels: Fuels derived from ancient buried organic matter, including coal, crude oil, natural gas, oil shales, tar sands, and asphalt.

Fuel cells: A device for electrochemically oxidizing fuel, usually hydrogen, to produce electricity directly without combustion.

Greenhouse gas: Any of a number of gases that act to trap heat in the atmosphere. Examples include carbon dioxide, carbon monoxide, and methane.

Hydrofirming: Using gas or some other source to generate electricity during low water periods when hydropower is scarce.

Interruptible power: Power that, by contract, can be interrupted in the event of a power deficiency.

Interties: Long-distance transmission lines such as those connecting the Northwest with the Southwest.

Least-cost planning: Evaluating all the possibilities for meeting demand for energy services, including the entire range of generating sources available and conservation or efficiency improvements.

National Energy Policy Act of 1992: The culmination of several years of effort to define a national energy strategy, signed into law by President Bush in 1992.

Power Council: See sidebar, page 16.

Regional Plan: Every five years the Northwest Power Planning Council releases a regional electric power plan that is designed to guide utilities and BPA toward the most cost-effective, environmentally sound resources. BPA must observe the plan, but it is primarily advisory to other utilities in the region.

Renewable resources: Energy resources used to generate electricity and/or provide direct energy services without relying on fossil or depletable fuels. Examples include solar hot water heating, solar electricity generation, wind generation, geothermal heating or electricity generation, and hydroelectric generation.

Solid fuel: Coal and wood.

Supply-side resources: Fuels and other methods of generating electricity.

Telecommunications: Transmitting information (could be voice, data, or video signals) by wire, optical cable, radio waves, or similar means.

Telecommuting: Using telecommunication technology such as telephones, personal computers, and fax machines in ways that permit employees to work at locations away from the main office and, by doing so, avoid commuting.

Turbines: Rotors that generate electricity when they are turned by water force, wind, or heat.

Acronyms

BPA - Bonneville Power Administration

ISTEA - Intermodal Surface Transportation Efficiency Act (a federal law)

SOV - single occupant vehicles

WSDOT - Washington State Department of Transportation

DCD - Department of Community Development

GMA - Growth Management Act

WSEO - Washington State Energy Office

HOV - High occupancy vehicles

DIS - Department of Information Services

WUTC - Washington Utilities and Transportation Commission

CAFE - Corporate average fuel efficiency (federal law)

CARES - Conservation and Renewable Energy System, a joint operating agency formed by seven Washington public utility districts

HVAC - Heating, ventilation and air conditioning

Btu - British thermal unit of energy. The amount of energy needed to heat one pound of water one degree Fahrenheit.

WPPSS - Washington Public Power Supply System

WNG - Washington Natural Gas Company

aMW - Average megawatt

VMT - Vehicle miles traveled

An Invitation to Action

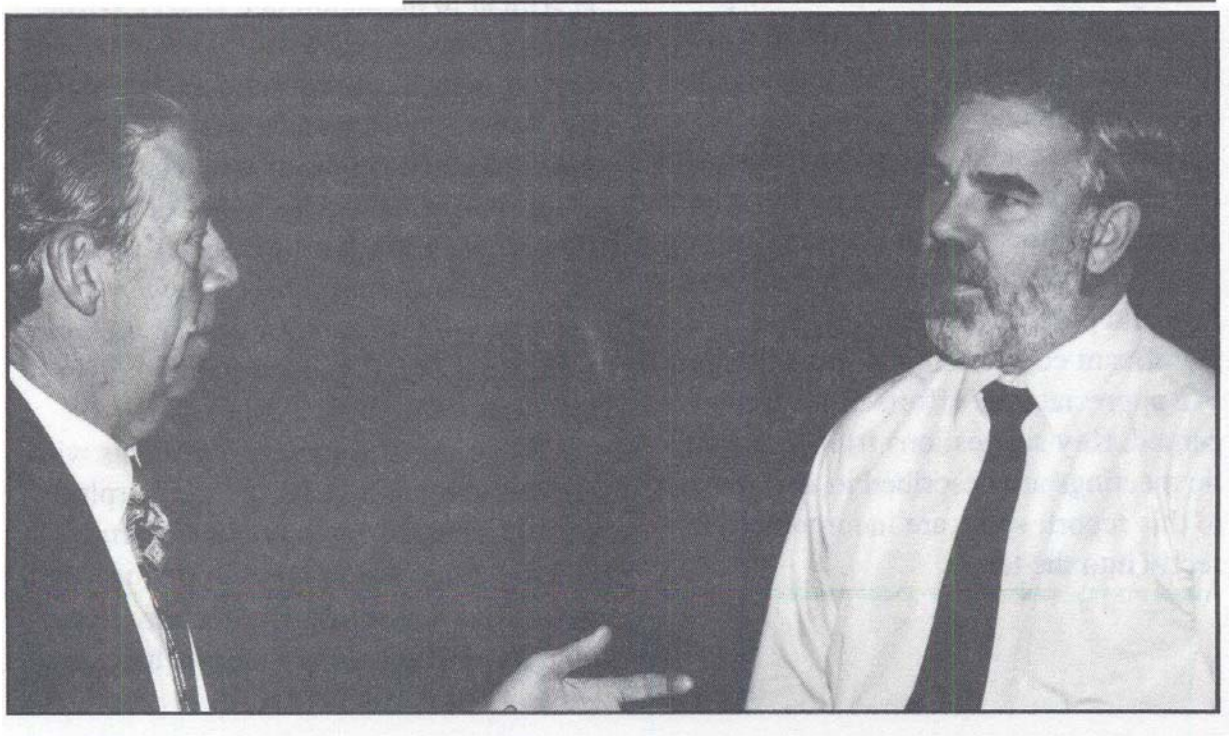
In 1991, at the Governor's request, the Washington State Legislature directed the appointment of a committee to draft an energy strategy for Washington State. The reasons were clear--our decade-long surplus of electric energy had disappeared, our transportation system was facing gridlock and petroleum use was rising, and new challenges to save endangered salmon species were testing the capacity of our hydroelectric system.

Today, as we prepare to report our recommendations, our situation has become more serious. The Trojan nuclear power plant, on the banks of the Columbia River, will be shut down in a few years by its owners; the WNP-2 nuclear plant on the Hanford reservation is challenged by concerns over its cost effectiveness; an increased number of Columbia river system fish will require special protection; and concerns still grow over the risks of substations and overhead transmission lines.

Washington State will be faced with some difficult energy decisions during the next few years. We must preserve endangered salmon species. We must act quickly to conserve electricity and use it more efficiently in our buildings and industries. We must site and license new transmission lines and power plants, both gas-fired and renewables, to meet new growth. We must develop renewable resources, such as wind power, to maintain a diverse, environmentally sound electricity system. We must do all this amid many uncertainties, including further population growth, if we are to maintain our quality of life, our environment, and our economic leadership in the Northwest.

We are further challenged by a mixed legacy: major hydro investments served us well, but more recently, in the 1970s, proposed nuclear investments mushroomed in cost and deflated public trust in energy decision making. A recent poll (discussed in more detail in Public Involvement section, p. 47) found the public unconcerned about energy problems and unwilling to believe they should be concerned.

Energy Strategy Committee members discuss the issues.



It is unfortunate that most energy decisions, because of their cost and lead time, must be made before there is universal recognition of a problem. If we wait, our best solutions may no longer be available; and crises themselves can paralyze decision making.

We must do better on all fronts, including information. But one thing is certain: we will need to act in advance of universal understanding. Inaction will entail higher costs, less reliable resources, danger to our economy, and heightened environmental damage.

Our proposed energy strategy offers many opportunities for timely action if implemented by the governor, the legislature, and the numerous private decision makers whose investments are vital to ensure environmental quality and adequate, economic, reliable energy. We must act quickly and rebuild public confidence in our actions. We will also need strong leadership. The Committee hopes its recommendations can help guide this leadership.

This strategy was developed by a group that represents many points of view. The Committee is made up of individuals who care about energy and how it is used. They have aired their differences and agreements and have provided you with a discussion of the challenges, the tradeoffs among alternative choices,' and a proposed course of action.

We also asked the League of Women Voters to take this strategy on the road to 14 communities around Washington during summer and fall of 1992. Public meetings and public comments made a significant contribution to this strategy. We appreciate the efforts of all concerned. Key suggestions from those public meetings are described in an appendix to this report; some are incorporated directly into the text.

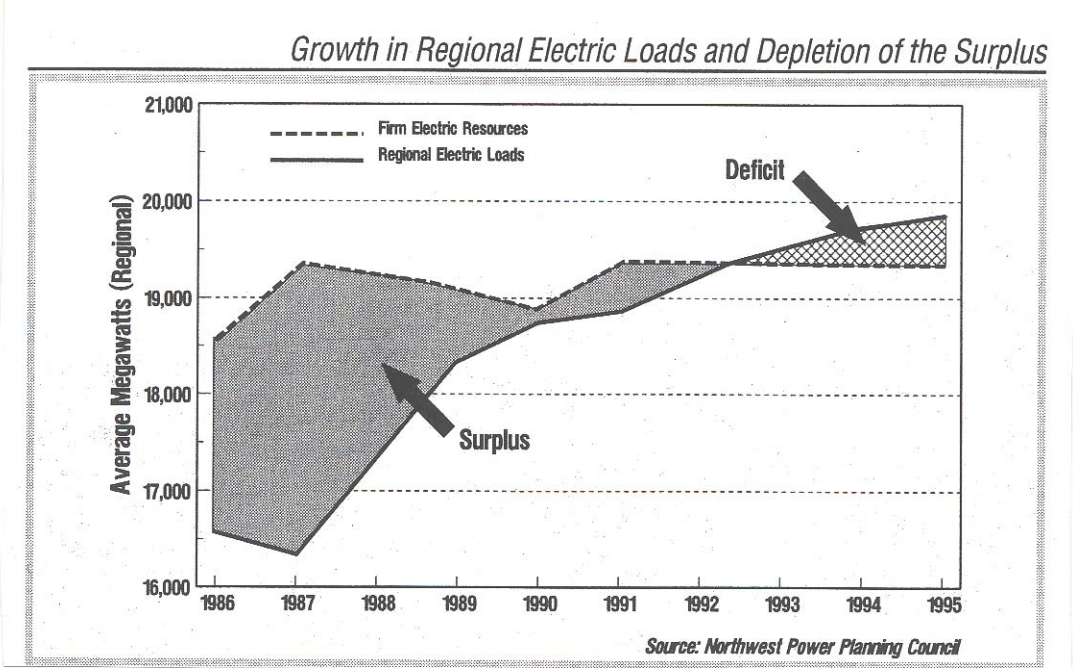
Background: Energy in Washington

Energy is one of the key factors that define the economic opportunities, environment, and quality of life in the state of Washington. Energy costs the citizens and businesses of Washington $9.2 billion a year-a larger part of our economy than forest products and more than twice the size of the state's agricultural or fishing industries.

Our energy system is somewhat unusual. First, we remain one of the more rapid growth areas in the nation. This has meant a significant increase in nearly all forms of energy use, despite the rising efficiency of our homes, cars, industries, and large buildings. Second, Washington's reliance on hydropower is unique. We pay about half the national average price for electricity and generate nearly half the nation's hydropower. We have avoided the need to use much coal, which is the predominant generating fuel for much of the rest of the nation. Industries needing low cost, reliable electricity supplies have located here. And, because electricity has been abundant and inexpensive, homeowners in Washington use more for home heating and water heating than elsewhere in the United States.

Perhaps more than in any other region of the United States, careful husbanding of low-cost electricity resources is critical to maintaining a clean environment and strong economy. This may help explain why the environmental community, business community, and utilities place so much emphasis on electricity conservation. Our costs have been extraordinarily low because our existing hydropower is so inexpensive; new resources-whether they are natural gas, coal, wind, solar, geothermal, or other are significantly more expensive.

We can make some adjustments without spending vast sums. As our surplus has disappeared, so may our opportunities to reduce power costs through sales to California utilities. But we should be able to substitute long-term exchanges of power that allow us to swap power in spring and summer (when salmon are migrating and flows through hydro facilities must be increased) for power in fall and winter (when our demands for electricity are highest). Even with these adjustments, we will need more generation, partly because existing plants (Trojan and some older hydro facilities) are being phased out or re-licensed at lower output. Unless economic growth dwindles, conservation won't fill the entire gap. Our next best alternative involves new gas-fired



power plants, preferably adjacent to industries that can use waste heat (cogeneration). Renewable resources, like wind, are nearly competitive with gas. We believe they merit prudent investments by utilities to reduce environmental impact and ensure diversity in our new supplies.

Pressure on electricity supplies is also closely related to demand for gas. We can provide some services, such as space and water heat, with either fuel. New electric power plants being built in Washington use large quantities of gas. One medium-sized 250-megawatt gas power plant uses about 30 percent as much gas as Washington Natural Gas (WNG), the state's largest gas utility, sells to all its core customers. At the same time, WNG is one of the fastest growing gas utilities in the nation; nearly all new single family homes use gas for space and water heat where it is available. The Committee emphasized the importance of increasing direct use of gas (for space and water heating) and increasing its availability, both of which can reduce strains on the electric system. The Committee identified several ways to increase gas availability and emphasized the great importance of increasing pipeline capacity from Canada for the many demands gas must soon meet.

Nearly half the state's energy demand is for transportation, and nearly all of that demand is met from petroleum. A consequence of our rapid growth is a system choked by congestion, declining air quality, and reliance on imported fuel and tanker traffic through the Sound. It is important to the citizens and businesses of Washington that we solve this problem. Our recommendations include a broad set of investments in improved air quality, decreased congestion, and new ways to move ourselves and our ideas with less energy. In many ways, we believe the consensus that has been built in electricity planning-concentrating on the cheapest and cleanest ways to deliver heating, lighting, and motion rather than on the cheapest way to make more electricity - can be applied in transportation to yield powerful results.

The natural environment is an important part of the quality of life in Washington. The Committee took great pains to develop an energy strategy that combined our need for a better environment with our need for reliable and cost-effective energy resources. The strong emphasis on cost-effective conservation and efficiency measures carries across all fuel types-electricity, natural gas, and petroleum. The Committee believes that improved efficiency is the best method for maintaining competitive energy bills and environmental protection. This applies whether we are trying to reduce the risk of oil spills, improve air quality, protect endangered salmon runs, or reduce the risk of global warming.

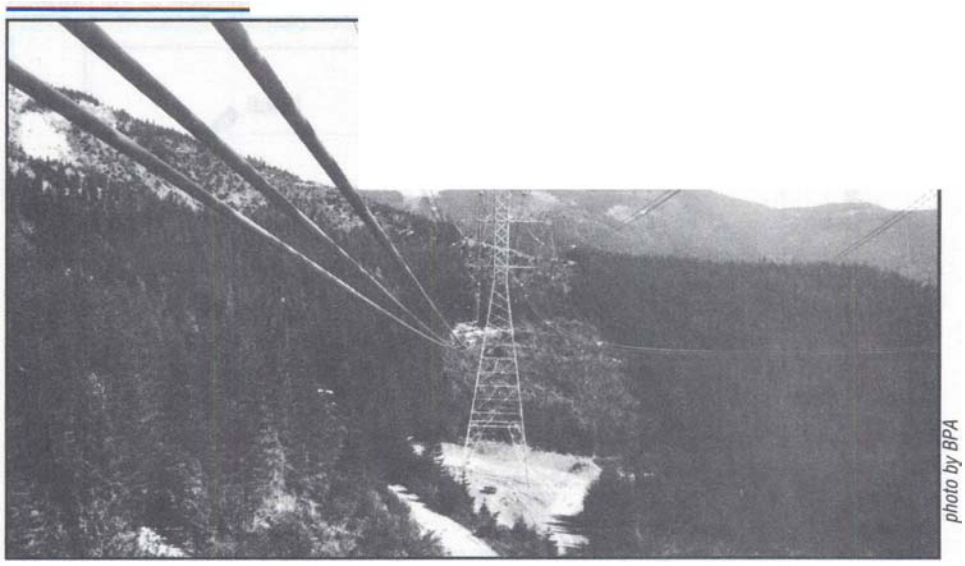
CONSERVATION AS A RESOURCE?

In the early 1970s, most utilities saw a limited set of alternatives for meeting growing demand for electricity-build either coal or nuclear power plants to increase supply. Conservation or improved efficiency was rarely, if ever, considered an equivalent electricity resource.

Today we know that stretching our electricity supplies by improving efficiency not only reduces the need for new power plants, it is also cheaper and less polluting.

Utilities can encourage improvements in energy efficiency by offering rebates or other inducements for efficient heating systems, water heaters, refrigerators, industrial motors, lights, and other equipment. Since saving electricity is equivalent to generating new electricity supplies, such utility programs are often called "conservation acquisition" efforts. Conservation programs help stretch electricity resources, establish a market for the most efficient goods, keep overall electricity costs as low as possible, and avoid the environmental impacts of new power plants.

Transmission lines carry power across the Cascades



If fully implemented, we believe the energy strategy we have proposed can have major economic and environmental benefits. With participation by all sectors-commercial, industrial, residential, and transportation-we estimate that we can reduce per capita energy use by 10 to 20 percent. This would reverse a recent trend of energy consumption and related air emissions increasing faster than our population. Our estimates also suggest that doing so will keep increases in energy costs at or below the level of inflation. Finally, the actions will eliminate about two-thirds of the state's projected growth in carbon dioxide emissions.

While some parties have called for more aggressive action, reversing the trend of per capita energy consumption will be a major accomplishment. Further steps could be taken if required by the new federal administration and if the information to make such decisions is available a year from now. As part of the strategy, we have proposed to track our performance in meeting these economic and environmental targets as well as in accomplishing the specific action recommendations identified later. We cannot allow these efforts to sit on the shelf.

This energy strategy should not be seen as the only answer or only direction. We urge the legislature and governor to consider this strategy and formally endorse or amend it as needed. It may have fiscal impacts; we encourage government to address these directly in considering our recommendations.

Throughout the following discussion, the Washington Energy Strategy Committee concentrates on approaches that address energy problems with known cost-effective technologies. Better methods will come along. We have encouraged the Bonneville Power Administration (BPA) and the region's utilities to invest in efficiency technologies and renewable resources that are on the edge of being cost-effective and allow us to diversify our energy system. In the interim, our key

message is that we pursue our recommendations concurrently rather than hold one approach hostage to another. We must proceed quickly on the urgent priorities-improved efficiency, expanded gas availability and pipeline capacity, investments in renewable resources, and electricity exchanges with the Southwest and British Columbia. Our transportation recommendations hold a similar message. The Committee feels strongly that these alternatives should not be perceived as in competition with one another, but as complementary actions toward a better future. We hope readers will agree.

Committee's Guiding Principles

In developing a state energy strategy, the Committee felt it was important to agree on a set of common principles and objectives. Our recommendations flow from these guidelines and principles and address specific and complementary roles for citizens, utilities, businesses, government, and public interest groups. When the strategy emphasizes the need for the state as a whole to take action, this is meant to be all parties, not simply government.

The Committee established the following general principles for an energy strategy .

- Implement all cost-effective energy conservation.
- Implement cost-effective energy policies that minimize environmental damage.
- Use sound scientific data and analysis as the basis for energy policy.
- Foster mutually beneficial relationships with nearby states and provinces to help accomplish Washington's energy goals.
- Use market forces-including fair competition and consumer choices-where possible, along with clear, fair rules and laws to accomplish our objectives.
- Respond creatively and prospectively to political, social, and environmental changes affecting the use and supply of energy.
- Maintain programs that ensure that all citizens, including those on small incomes, have access to such basic energy services as heating, lighting, and mobility.
- Lead by example with energy efficiency in state and local government operations.
- Cultivate diversity in energy supply, including new technologies and renewable resources such as wind, geothermal, hydro, biomass, and solar technologies, where a modest initial investment can help develop a cost-effective resource.
- Ensure broad participation by the state's citizens in this strategy and provide information and education to enhance understanding.

The strategy contains five chapters.

The first addresses transportation; the second describes energy use in agriculture, buildings, industries, and public facilities, concentrating on natural gas and electricity; the third chapter outlines the connections between energy use and our environment; the fourth chapter addresses issues of energy facility siting; and the fifth chapter reviews the role of the Washington State Energy Office. Between the chapters are short issue sections: on the connections between energy and the state's growth management policy; on public education, technician training, and schools; on how we propose to measure the success of actions proposed here; and, finally, on public involvement in developing this strategy.

1. Transportation Challenges

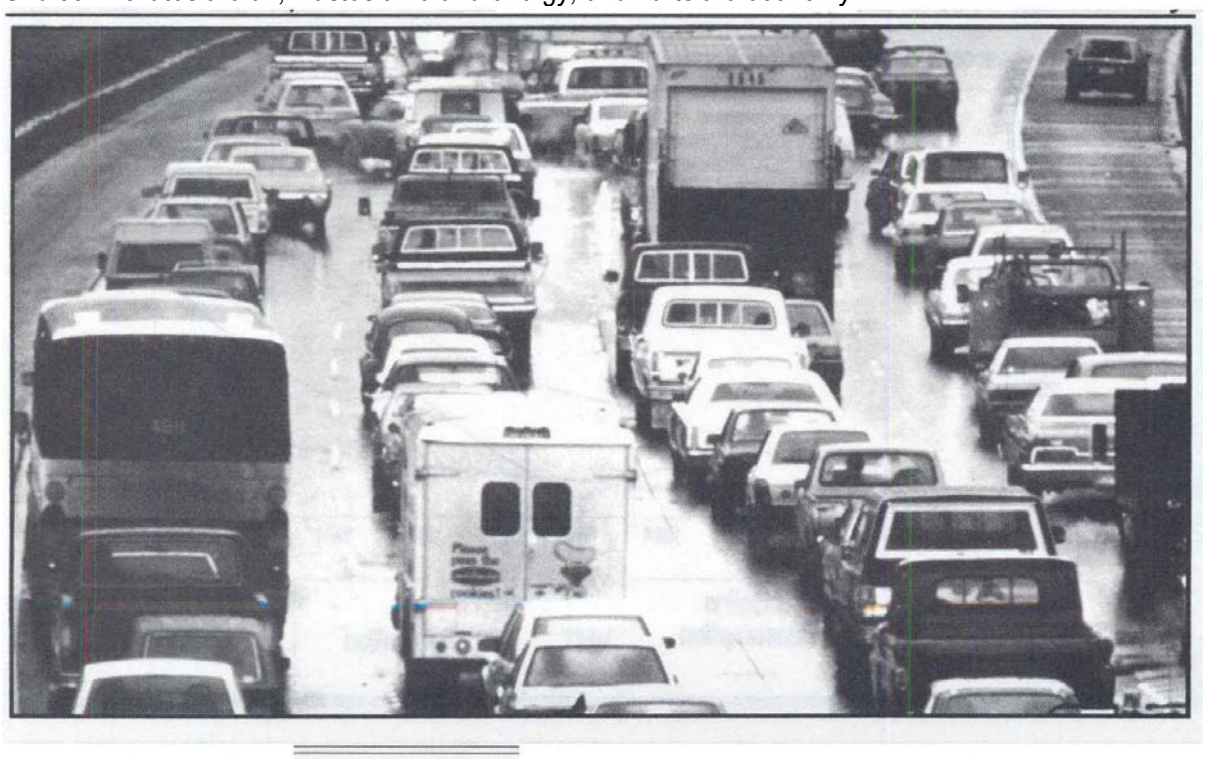
Nearly half of Washington's energy use moves goods and people from one place to another-in cars, trucks, airplanes, boats, ferries, and rail cars. Transportation systems not only move goods and people but also allow the interchange of ideas and information-crucial components of our economy and lifestyle. However, growth in our population and economy is placing greater demands on the transportation infrastructure and the state's environment. Growth also results in more energy consumption.

Over the last decade, use of gasoline and diesel fuel grew more than 70 percent faster than the state's population, and the number of vehicle miles traveled (VMT) shot up more than two-and-a-half times the rate of population growth. Washington's Department of Ecology has identified vehicle exhaust as the leading source of hazardous air pollution in the state. Motor fuels consumed by cars, trucks, and buses account for about 40 percent of Washington's total energy-related carbon dioxide emissions.

Furthermore, it is becoming more difficult, time consuming, and expensive to get from here to there. We face the challenge of meeting demand for transportation services while at the same time minimizing congestion, environmental impacts, and growing dependence on petroleum fuels.
This challenge is not confined to the urban areas of Western Washington. Deteriorating highway roadbeds and declining competition among gasoline providers and freight transportation are serious rural problems. In addition, many less populated areas are in need of economic development. Better transportation systems and broader distribution of business outside the central Puget Sound metropolitan area would not only reinvigorate smaller communities but also relieve congestion in the largest urban centers.

Using transportation energy more efficiently can improve the economy and environment of the entire state. Dollars we save on transportation fuel, almost all of which is imported from outside the state, can remain in the local economy. Greater efficiency can also lead to improved air quality and reduce our vulnerability to supply disruptions. Capturing these efficiencies will require vastly improved planning processes, careful coordination among transportation agencies, and a commitment to action and efficient implementation by both the public and private sectors.

Gridlock Pollutes the air, wastes time and energy, and hurts the economy.



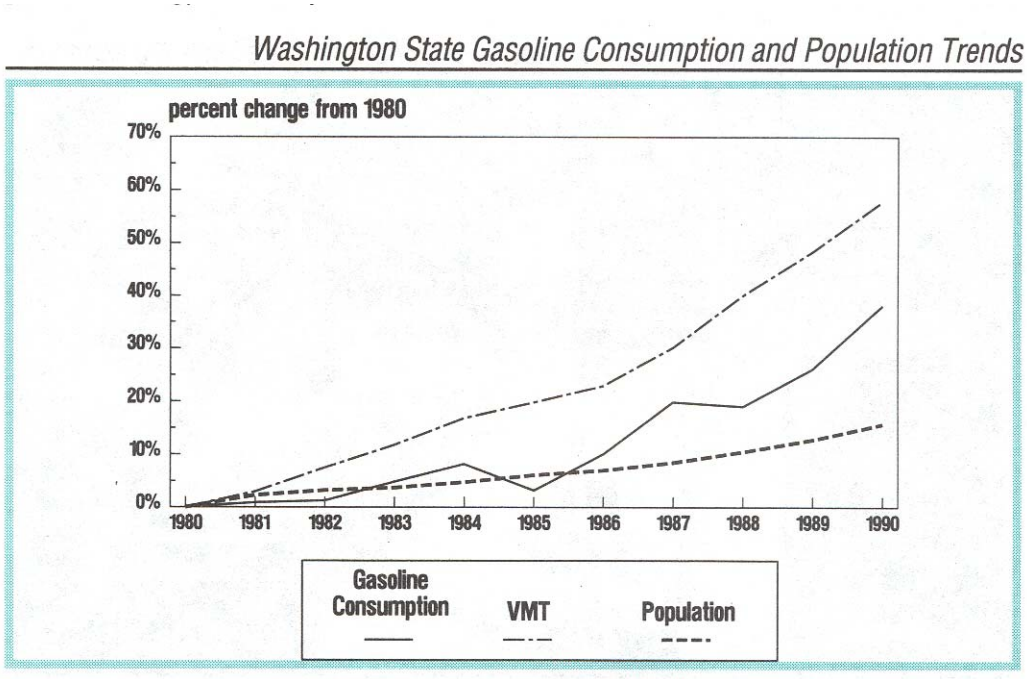
Planning for Solutions

For many decades, transportation planning was little more than widening roads and building new ones wherever wheels squeaked the loudest. We no longer have the economic resources to conduct this sort of transportation planning; fundamentally different approaches are underway. In 1991, federal legislation --the Intermodal Surface Transportation Efficiency Act (ISTEA)--shifted emphasis from constructing highways to developing a transportation system that promotes energy efficiency, rural development, and environmental protection, and reduces congestion and pollution. Future access to federal transportation funds may depend on our ability to prove that our efforts and plans do, in fact, reduce congestion and improve air quality. Recent air quality and growth management laws in Washington State have created new approaches for solving these problems.

Transportation planning is increasingly complex. Even at peak hours, most highway trips are taken for reasons other than commuting. People rely on the automobile to take children to daycare, get to adult education classes, or do their shopping. All of these trips can add to peak hour congestion and the demand for expanded highways. In some areas of the state, road improvements are needed to ensure adequate traffic flow and safety. Nevertheless, the Committee believes that meeting energy efficiency and air quality goals will require less focus on meeting the demands of single-occupant vehicles (SOV), and more on creating, better alternatives to SOV travel.

Transportation planners must integrate expanded transit alternatives and other modes of travel with public highways. Additional policy options that must be considered include: transportation substitutes, such as telecommunications; demand management tools, such as commute trip reduction programs; and land use planning techniques that reduce the need for single occupant vehicle trips. Finding the right mix of policies at the lowest social cost is essential to meeting our transportation needs. In particular, we must ensure that low-cost, flexible strategies that could reduce or delay the need for heavy capital investments are given a fair and timely evaluation in the planning process.

Policy changes are coming, but they will require a high degree of coordination to be most effective. The Washington State Department of Transportation (WSDOT) is the primary agency in charge of transportation planning and the Department of Community Development (DCD) is charged with implementing the state's Growth Management Act. These agencies must work with each other and with the Washington State Energy Office (WSEO) to ensure that energy considerations are adequately addressed.



We believe three elements are needed to develop transportation plans that are comprehensive and efficient.

- Plans must use a "least cost" methodology.
- Plans must be comprehensive. Incorporating connections between mode of travel and operating efficiencies.
- Transportation plans must be carefully integrated into overall land use planning through the Growth Management Act. A discussion of energy efficiency opportunities presented by the Growth Management Act is on page 11.

Least-Cost Planning

In the last decade, energy planners in the Northwest have pioneered "least-cost planning" as a way to meet our electricity needs at the lowest cost. They have developed models to more accurately project electricity demand, and to evaluate a mix of demand-side (conservation) and supply-side (generation) resources. We believe that many lessons learned in the energy field have substantial promise in transportation.

Least-cost planning does not require customers to sacrifice quality, reliability, or access. Instead it takes the user's perspective on quality, reliability, and access and forces planners to fairly evaluate all reasonable ways to meet those goals. For example, the Committee heard evidence that rail capacity is underused, both for passenger travel and freight movement. Least-cost planning would compare the cost of using rail with other options. The Intermodal Surface Transportation Efficiency Act has created more flexibility in transportation funding, and this is a real opportunity for Washington State. We can develop a transportation system that better serves the public and is more energy efficient, provided we build a planning process that is integrated, comprehensive, and aimed at the right target.

Specifically, we recommend that WSDOT establish a planning process that:

- Clearly specifies the goals of the transportation system and objective measures for each goal. WSDOT's State Transportation Policy Plan represents a good start at defining goals. but these must be combined with a means of measuring progress.
- Fairly evaluates the costs of both demand-side and supply-side options to meet each goal, including the social costs, energy costs, and environmental costs.
- Integrates planning for different modes of travel, so that there is competition among modes in the planning process. For example, planners must be able to analyze the costs and benefits of air, auto, and improved rail travel options between locations such as Seattle and Portland. For such trips, the speed of air travel might be matched by improved rail or auto when travel time to and from airports is considered: As a result, current airport capacity might be freed up to meet national or international air travel needs, thereby postponing or modifying costly additions.
- Selects a mix of options designed to meet overall system goals at the lowest cost to society.
- Involves appropriate agencies with environmental, energy, and land use expertise. To this end WSEO should be formally added to the State Transportation Policy Plan Advisory Committee.
- Involves the public, both as technical advisers and as commenters on the plan.

WSDOT's planning processes continue to evolve, and our proposal may represent a change in emphasis more than a radical shift in approach. Our state's experience in energy efficiency demonstrates that it is possible to reduce demand, but it also shows that demand-side approaches must be given sufficient investment and time to work.

Operating Efficiencies and Connections

For an efficient transportation system there must be convenient connections between the various types of transportation. When choosing how to travel, an individual considers the convenience, cost, and time of the entire trip. An improved rail option might look less attractive if there were no convenient way to the train station or no convenient connections at the destination. From the traveler's standpoint, connections between modes need to be readily available, affordable, and reliable. These connections will not happen by themselves; they will require intelligent planning and concerted action.

Also, detailed attention must be given to operating efficiencies. Intelligent planning can be defeated by operating practices that waste energy. In particular, ensuring efficient routing and sizing of transit vehicles is important. Increased use of smaller more flexibly dispatched transit vehicles shows promise and should be expanded.

We recommend that WSDOT work with local transportation agencies and planners to identify and implement opportunities for improved connections and operating efficiencies. WSDOT should seek active participation by managers of facilities likely to benefit from improved inter-modal connections (e.g., hotels, convention facilities, tourist attractions).

A Framework for Action

While integrated planning is a key to long-term transportation improvements, action cannot hinge on developing a perfect plan. Gridlock on these issues and on our highways must be addressed now. We recommend the following specific actions to improve the efficiency of our current transportation systems.

- Incentives for sound alternatives to the single-occupant vehicle
- Regional planning for bus and rail systems
- State investments in high-occupancy vehicle lanes
- Development of communication alternatives that can displace some of the demand for transportation

Opportunities for Change

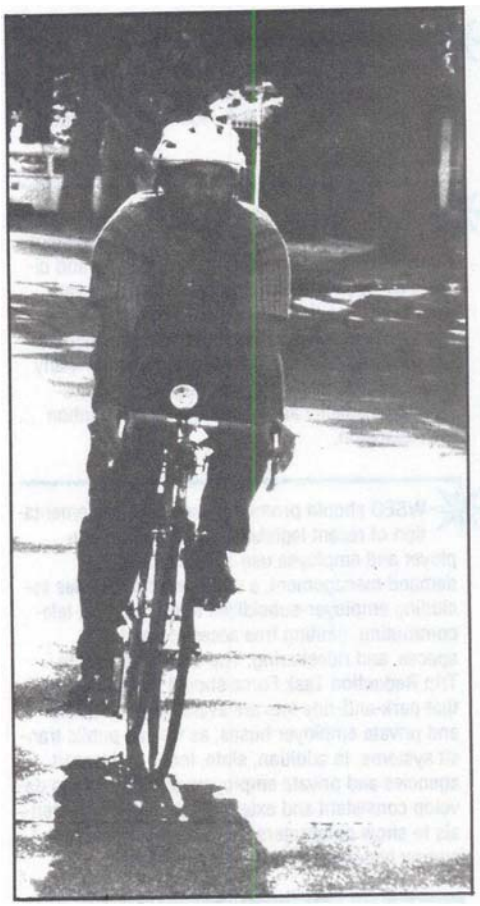
Transportation problems are not uniform throughout the state. While some areas are congested and polluted, in other areas deteriorating highway roadbeds and declining competition among freight transporters are the issues. The Committee's focus is on practical transportation policies that reduce energy use, primarily by reducing vehicle miles traveled, or by decreasing congestion so that vehicles can move more efficiently. Statewide, however, improving transportation should be linked with encouraging business development outside the central Puget Sound metropolitan area.

Communities outside that area have a key role to play in a more efficient system. As we try to increase urban density, we also need to examine all the energy, environmental, transportation, and economic benefits of new business development outside congested urban areas, particularly where development can revitalize the economies of existing towns, cities, and communities. Information industries, not physically dependent on proximity to the urban core, may be especially suited to such opportunities. In many parts of Washington the physical, educational, and social infrastructure already exists to support efficient economic development and population growth. However, tapping this potential will take coordinated efforts by appropriate state agencies, local officials, corporate leaders, and participating communities.

We have grouped our recommendations into five broad categories: changing the ways people travel; developing substitutes for transportation; using alternative fuels; improving freight mobility; and improving vehicle efficiency.

Changing the Ways People Travel

Heavy dependence on the single occupant vehicle increases air pollution, petroleum use, and urban congestion. Congestion inhibits the movement of people, goods, and information. Congestion also imposes major economic costs as well as psychological stress. Some studies have concluded that the economic costs of rush hour congestion range from 35 to 70 cents per vehicle mile traveled; these



Bicycle commuting helps ease urban congestion and improve air quality.

costs are much higher than the direct costs of operating the vehicle. Changes in the way people travel can help alleviate these problems.

There are many reasons for our reliance on single-occupant vehicle trips. As noted earlier, we have adopted land use patterns that favor the private automobile at the expense of transit, bicycles, and pedestrians. We have developed tax and fee systems that reward drivers who travel more miles. We often provide free parking but charge for transit.

The structure, costs, and benefits of options for expanded transit, light rail, and high speed rail are still being developed. While some combination of these will playa major role in our long-term future transportation system, the Commit tee recommends a number of cost-effective steps that can be taken now to make the system more energy efficient. For example, the rail system is underused for passenger and freight movement. A relatively small investment in upgrading the current rail system could improve service and increase the use of rail now. AMTRAK has estimated that significantly improving average speed between Vancouver, B.C., and Portland could cost $700 million. Such an investment appears to make economic sense, whether or not more extensive and expensive investments are made later. These types of changes, which build on existing systems, are flexible and can be deployed relatively quickly.

The Committee recommends the following specific actions to encourage changes' in the way people travel:

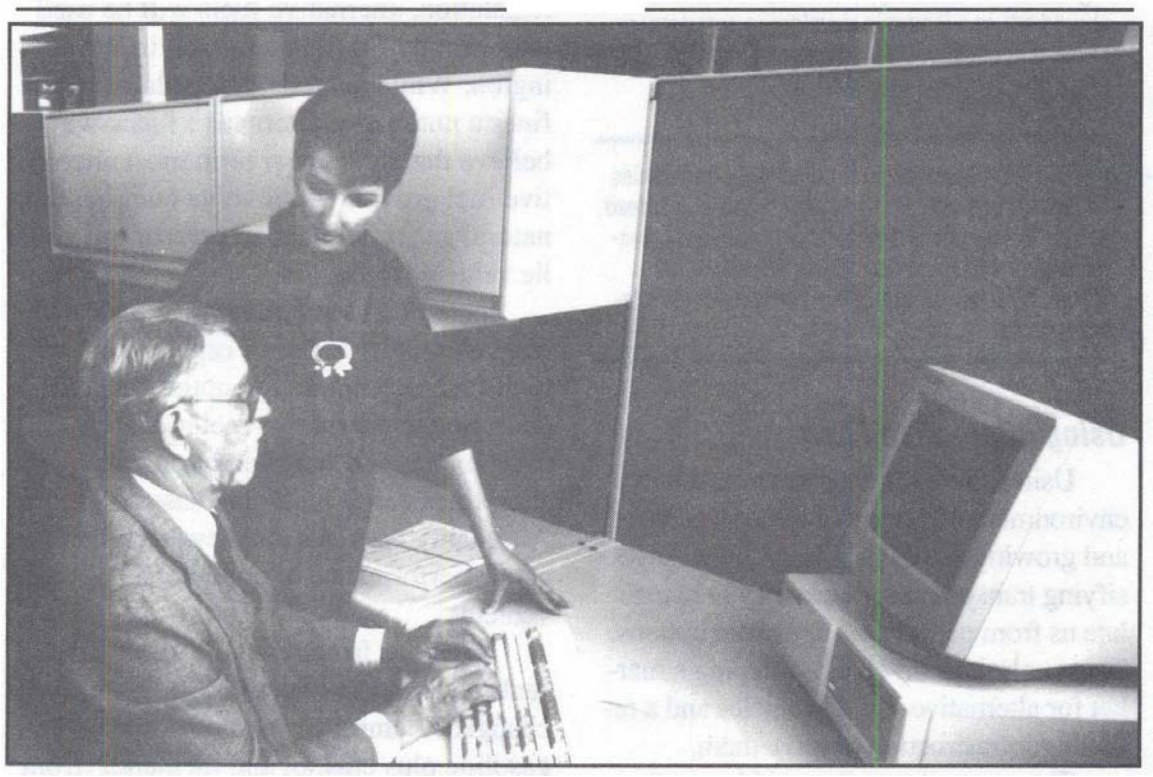
- Make cost-effective investments needed to improve the rail system so that it may be fully used for passenger and freight movement, particularly in the Vancouver, B.C., to Portland, Oregon, corridor.
- Complete construction of Puget Sound area HOV lanes, arterial connections to the system, ramp access, and the parking, pedestrian, and bicycle access necessary to use the bus and vanpool system to its fullest. In particular, transportation authorities must ensure adequate capacity and security at park-and-ride lots. Many park-and-ride lots in greater Puget Sound are reaching capacity and deserve priority attention for expansion.
- WSEO should promote successful implementation of recent legislation encouraging employer and employee use of transportation demand management, a wide range of policies including employer-subsidized transit passes, telecommuting, limiting free access to parking spaces, and ridesharing. The state's Commute Trip Reduction Task Force should work to ensure that park-and-ride lots are available to carpools and private employer buses, as well as public transit systems. In addition, state, local, and transit agencies and private employers should work to develop consistent and extensive educational materials to show commuters the benefits, including energy benefits, of commute alternatives.
- WSDOT, cities, and counties should provide opportunities for safer and more accessible bicycle and foot transportation directly into core city areas. This will become more important as non-motorized transportation-especially bicycle traffic-continues to increase. Transportation planners should emphasize cost-effective opportunities for dedicated bicycle lanes and safe pedestrian access to and within cities. Local transit agencies should add bicycle racks to buses. Employers and merchants should be encouraged to provide safe and adequate storage facilities for bicycles.
- As part of overall efforts to reduce urban, peak-hour highway congestion, WSDOT should develop a specific proposal for a congestion pricing pilot program. Congestion pricing would charge users for use of the highway during peak periods. Only by developing a specific proposal can implementation, equity, and cost questions be clearly defined and addressed. As part of its planning process, WSDOT should consider a program allowing single occupant vehicles paid access to under-utilized HOV lanes, without compromising the speed of HOV lane travel. Proceeds from such a pilot could be used to fund other experiments. WSDOT should seek ISTEA funding, if available, for the pilot.

Developing Substitutes for Transportation

Our lifestyle and economy depend on affordable, rapid access to efficient transportation systems; however, revolutions in communications and related technology now permit many opportunities to substitute communication for travel. Computer networks permit companies and individuals to locate outside urban core areas without compromising their ability to interact. Video teleconferencing and wider use of computer networks will strengthen this option. These strategies present a major opportunity to revitalize some cities, towns, and communities while reducing the costs of urban congestion in others. They also challenge us to provide this technology throughout the state, including rural areas, so that all citizens may benefit.

The Committee believes that, over time, replacing transportation with communications may contribute greatly to solving problems of congestion, environmental impacts, and growing petroleum dependency. Particularly promising applications are telecommuting, which allows workers to work from home, and telework centers, which allow workers to commute to a remote site, outside congested areas. The recently concluded WSEO Telecommuting Demonstration Project reports that, in the short term, telecommuting saves energy, particularly gasoline. At the same time the demonstration found that more work is needed to decrease the cost and increase the use of telework centers. More demonstrations and experiments are needed to develop the most effective strategies to use telecommunications to move information rather than using fuel to move people.

Telecommuters avoid rush-hour by working at home or in a local telework center.



While the focus of our recommendations is on telecommuting and telework centers, which have the potential to reduce peak-hour, urban highway congestion, the promise of telecommunications is much broader. Distance learning and distance medicine could deliver sophisticated services to homes or offices, reducing transportation needs. Improved access to information about road conditions could reduce highway congestion. Utilities could give consumers better information through telecommunications, providing the incentive for more efficient use. Over time, these options should be carefully explored and developed.

We recommend that the following research, development, and demonstration experiments be undertaken to reduce overall demand for transportation through the use of advanced communications technology.

- The Washington Utilities and Transportation Commission (WUTC) should work with WSEO to assess the long-term ability of communications technology to substitute for transportation by convening a forum of communications users and providers. With its strong communications and microcomputer industries, Washington is well positioned to test advanced non-travel technologies to reduce urban congestion, improve air quality, and increase the distribution of development statewide.
- The state should encourage the establishment of centralized "telework centers" in urban and suburban areas. In Puget Sound, we are beginning to see telework centers that permit employees from a variety of businesses or agencies to use nearby offices connected by computer to their individual headquarters. To provide a model, the state of Washington should reestablish its telework center.
- The state should locate significant state office facilities in non-metropolitan areas, using telecommunications to provide needed information links. From this experience models should be developed

to share with government agencies and private employers who could locate facilities away from urban centers.

- The state of Washington should develop a model telecommuting program and policies that could be adapted by government agencies and the private sector. WSEO, WSDOT, and the Department of Information Services (DIS) should develop an ongoing technical assistance and research role for organizations developing telecommuting and telework projects.
- The Department of Information Services should continue to work with public and private organizations developing video conferencing as an alternative to travel. In addition, DIS should act as a leader in developing and demonstrating applications that make telecommuting more effective and efficient.
- The WUTC and telecommunications companies should consider tariffs to encourage widespread access to services that provide simultaneous transmission of voice and data. Such services could stimulate increased use of telecommuting and telework centers.

Using Alternative Fuels

Using alternative fuels can lessen the environmental impacts of transportation and growing use of petroleum fuels. Diversifying transportation fuels may help insulate us from petroleum supply disruptions. These solutions involve developing a market for alternative-fueled vehicles and a refueling infrastructure to serve them.

The acute air quality problems of southern California and the eastern seaboard are spurring alternative fuel efforts. The Committee anticipates competition among a range of fuels and vehicle manufacturers. Low, ultra-low, and even zero emissions vehicles will be built for the southern California and eastern seaboard markets and for other urban areas that do not meet federal or other air quality standards.

As a consequence of recent federal legislation, alternative fuels will be used increasingly for transportation in Washington. While the federal legislation defines a number of alternative fuels, we believe that in the near term most alternative fuel growth will involve compressed natural gas or propane in private and public vehicle fleets. Increased use of alternative fuels can have air quality benefits, especially in vehicles whose engines are optimized and dedicated to alternative fuel use. However, improperly installed or operated equipment can actually increase pollution. Air quality agencies must evaluate the actual performance of alternative-fueled vehicles.

A decade from now, the alternative fuels and vehicle markets will be much changed. Natural gas and reformulated gasoline plus ethanol and methanol (from agricultural, forestry, or even solid wastes) will compete with hydrogen (possibly in fuel cells) and electricity for the "clean" fuels market. Each of these fuels receives different state and federal tax treatment. The Committee recommends that Washington participate judiciously in demonstration projects, analyze the activities and lessons learned by other states and provinces, pick from the best options as needs arise, and use tax incentives carefully and equitably.

Low price and environmental advantages are increasing the demand for compressed natural gas as a vehicle fuel.

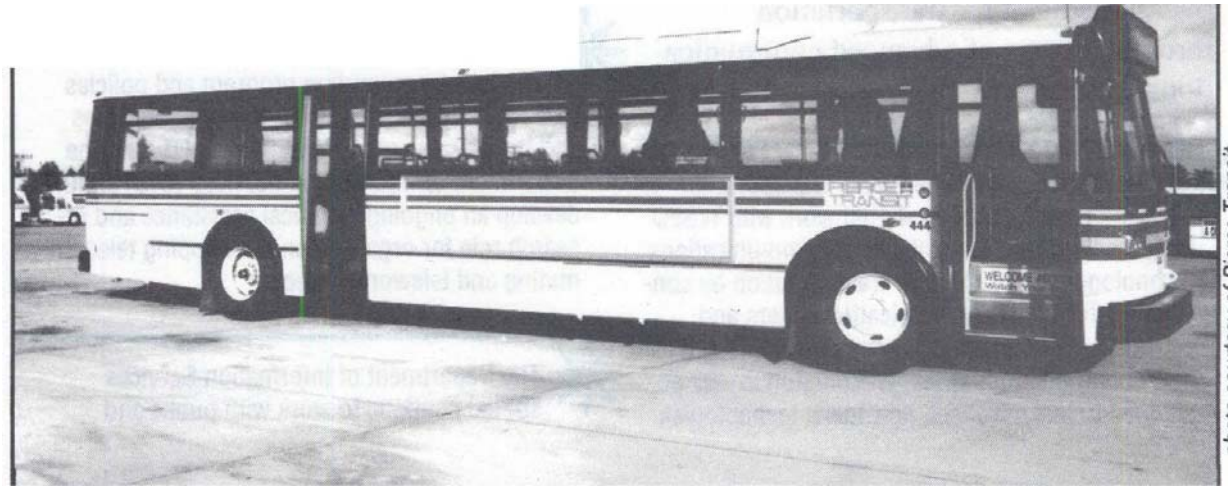


photo courtesy of Pierce Transit

The Committee believes that the following actions would encourage appropriate use of alternative transportation fuels.

- The 1992 federal energy legislation contains broad requirements for federal, state and private fleets to purchase alternative fuel vehicles. The departments of Ecology and General Administration and WSEO should work together to ensure that current state purchasing requirements for clean-burning vehicles fit these federal mandates.
- The Committee sees alternative fuel experiments as desirable, including developing the infrastructure necessary for the experiments. WSEO should track the energy use implications, air quality benefits, infrastructure requirements, and state regulatory issues in these experiments, and report to the legislature before broader mandates for alternative fuel use are adopted.
- While alternative fuel experiments are desirable, until results are more clearly known, it is too early to advise the public to convert private vehicles to a specific alternative fuel.
- Because proper installation of alternative fuel equipment is critical to securing air quality benefits, the Department of Ecology should develop emissions performance standards for alternative fuel vehicles.
- During the next few years, WSEO, WSDOT and the Department of Revenue should better define "alternative fuels" and establish a clearer basis than we have now for differential tax treatment.
- California's acute air quality problems and aggressive low-emission vehicle demonstrations are forcing technological change. Washington's air quality problems are not as serious as California's, and it is the Committee's view that the best strategic decision is to give the market winners a chance to rise to the top. The state Energy Office and Department of Ecology should explore the development of a cooperative West Coast (British Columbia, Washington, Oregon, and California) effort to ensure maximum learning, minimal duplication of effort, and development of a larger market for these vehicles.

Improving Freight Mobility

Freight mobility is a key to the Washington economy. Goods move by rail, truck, and plane, and are shipped into, within, and through the state. The choice of mode can either cost or save energy. However, not all modes are available in all areas.

For example, changes in the underlying economics of transportation have led to less rail use and more truck use, even though rail can save energy and highway wear. Nearly 1800 miles of railroad branch lines have been abandoned in the state since 1970. Some of these branches can be operated as short line railroads, but many cannot, given current transportation economics. While those economics may change, if the rights-of-way are lost, restoring rail service in the future may no longer be an option. The effect of these changes can fall particularly hard on rural areas, forcing the use of less efficient transportation methods and driving up the cost of goods and the use of energy. While the state legislature has developed a program to purchase rail rights-of-way that are in danger of being abandoned, it appears the program has structural and funding limits that reduce its effectiveness.

At the same time, urban congestion is greatly reducing the operating efficiency of trucks. Nationally, congestion is estimated to cost freight carriers $7 billion per year. This amount will increase as urban congestion increases. At least a portion of these costs stem from increased energy costs. Many of the steps we have recommended to reduce use of single occupant vehicles should reduce congestion, improving conditions for freight mobility.

The Committee believes the following steps are needed to preserve intermodal transportation options and to improve the efficiency of freight carriage in general.

- The WUTC should work to improve the energy efficiency of the trucking industry by developing regulatory mechanisms that promote cost effective and efficient use of fuel. These may include steps to minimize trucks returning empty on "back hauls" and rate structures that encourage efficient routing.
- Revitalize the state rail abandonment program to avoid further railroad right-of-way losses in Washington State, and, where appropriate, to purchase and preserve abandoned rights-of-way. WSDOT should pursue legislation to establish a program of state priorities and projects that can be funded for direct purchase, and should focus on funding requirements and new funding strategies, especially federal funding. In cases where preservation for transportation use is clearly desirable and funding cannot be obtained in the near future, WSDOT should develop strategies to slow right-of-way abandonments and conversions. Local governments preparing comprehensive plans should also act to preserve rail corridors as transportation options.

- WSDOT should examine ways to promote broader use of rail freight options, including the economic potential for short-line rail operations.

Improving Vehicle Efficiency

While the strategies previously discussed will reduce our dependence on the single-occupant vehicle, the Committee believes actions should be taken to improve the efficiency and reduce the environmental effects of today's cars and trucks. The technology to create more efficient vehicles exists today, and the energy savings from increased efficiency could be enormous.

A market for more efficient vehicles can be developed if major purchasers coordinate their efforts. A number of western states, including Washington, are developing purchasing consortia for pharmaceuticals, paper, and other items. Such an approach might be adapted to public fleet purchases, increasing the market power of states to secure more efficient vehicles.

Specific steps the Committee recommends to improve vehicle efficiency are the following:

- Seek our Congressional delegation's support for increased federal Corporate Average Fuel Efficiency (CAFE) standards.
- Washington State should propose that the western states expand purchasing consortia to include automobile fleet purchases, with the aim of stimulating auto manufacturers to develop safe, higher-mileage and lower-emission automobiles.
- The departments of Revenue and Licensing and WSEO should develop a proposal for the 1994 legislative session to change the current license registration and excise tax system so that it charges less for vehicles with better mileage/emissions performance and more for vehicles with poor performance. The proposal should be revenue neutral and should consider the safety implications of encouraging sales of smaller vehicles.

In the short term, the Committee sees little alternative to petroleum dependence for transportation. We believe the actions identified above will minimize and potentially reduce the growth of petroleum use. By how much we do not know. As a preliminary goal, we suggest that the state seek to improve vehicle efficiency at a rate of about 3 percent per year and halt the growth in per capita vehicle miles traveled (VMT). The vehicle efficiency goal is roughly equivalent to proposed CAFE standards at the federal level. It could be achieved in individual states through cooperative actions, efficiency-based registration fees, and the other elements of the strategy. The VMT goal may be heroic, but it is consistent with recent state legislation calling for significant reductions in Puget Sound area commute trips.

Our continued reliance on petroleum, whether it flows from the Persian Gulf, Indonesia, or Alaska, is risky. Supply interruptions may be caused by national or international events. To ensure that petroleum is allocated fairly during emergencies, the Committee recommends WSEO be funded to keep state energy emergency preparedness plans updated.

Funding Alternatives

In an era of scarce resources, securing adequate funding for transportation improvements will be challenging. While precise numbers are still being developed, the cost of major transit expansions alone could run to many billions of dollars. This cost underscores the need for a planning model that incorporates less expensive demand management options and seeks policies that are the lowest cost to society.

Because of the uncertainty surrounding many of these plans, the Committee does not recommend a specific funding package. However we do recommend a series of principles to guide policymakers.

- All transportation funds should be examined and reprogrammed to promote efficiency goals. Where fund use is limited by the 18th Amendment, planners should target highway operation improvement, such as HOV lanes and park and-ride facilities that can reduce VMT per capita.
- Realign existing taxes to reinforce policy goals. In particular, ensure that tax structures do not provide incentives to increase VMT per capita, increase emissions, or decrease vehicle efficiency.
- Take advantage of available federal funds for developing new programs or technologies. Federal energy legislation and ISTEA, in particular, provide funding for work on alternative fuels and congestion pricing.

- Even with reprogramming and more efficient use of existing funds, we believe it likely that meeting our needs for improved transportation infrastructure and services will require additional revenues. To send consistent policy signals, we believe that new revenue should be raised by taxing the commodity or activity that is causing the problem. Revenue alternatives that we believe merit consideration include: a) raising the fuel tax; b) extending the sales tax to sales of vehicle fuels; c) repealing tax exemptions for alternative fuels; d) repealing the 18th Amendment to the state constitution so that existing gas tax money may be used for other transportation system needs as well as highways.

We recommend that the legislature determine the remaining unmet capital needs and appropriate the necessary revenues. Where capital projects are funded with increased revenues, we believe the Legislature should consider using a sunset provision for the revenue source, so that revenue needs and uses are periodically examined.

Growth Planning For Energy Efficiency

The state's Growth Management Act (GMA) provides a significant opportunity to capture enduring energy savings. Most counties in the state are required or have opted to plan under the GMA. Counties and cities will be developing comprehensive plans to govern future development. Because choices made in planning can lead to different levels of energy use, it is critical that planners adopt policies that encourage efficiency.

For example, over time we have adopted land use practices that favor the private automobile at the expense of ride-sharing, transit, bicycles, and pedestrians. The GMA, through the required transportation element in local comprehensive plans, provides an opportunity to revise those practices in a fundamental way. In particular, we can encourage local planners to improve efficiency by enhancing access to transit, dedicating pedestrian and bicycle lanes, and providing opportunities for reaching commercial services without a car trip.

In the area of urban design, planners can use the GMA to encourage site design and construction that is more energy efficient. For example, planning solar access to a site would allow future developments to better use active or passive solar technologies as they develop. Planners can also use GMA provisions to provide siting opportunities for renewable resources and transmission facilities, while accommodating public concerns.

The first GMA comprehensive plans are due in mid-1993, with development regulations to follow in mid-1994. Our recommendations are aimed at ensuring that local planners have information needed to make energy efficiency a part of those plans and regulations.

Specifically, we recommend:

- WSDOT and WSEO should jointly develop a technical assistance program for local planners on the energy implications of different growth planning strategies. The agencies should work with DCD to ensure effective communication with local planners during development of local comprehensive plans during 1993 and in subsequent revisions.

- WSEO should work with other interested parties to develop models for planners that demonstrate the energy implications of alternative urban designs. These models should address all types of energy use, including transportation energy. In the near term, WSEO should work with local governments to enact solar access ordinances that reduce cooling and heating requirements through incorporation of passive solar design in commercial and residential buildings. WSEO should also advocate that comprehensive plans preserve opportunities for efficient renewable energy projects.

2. Energy for Buildings, Farms, and Industry

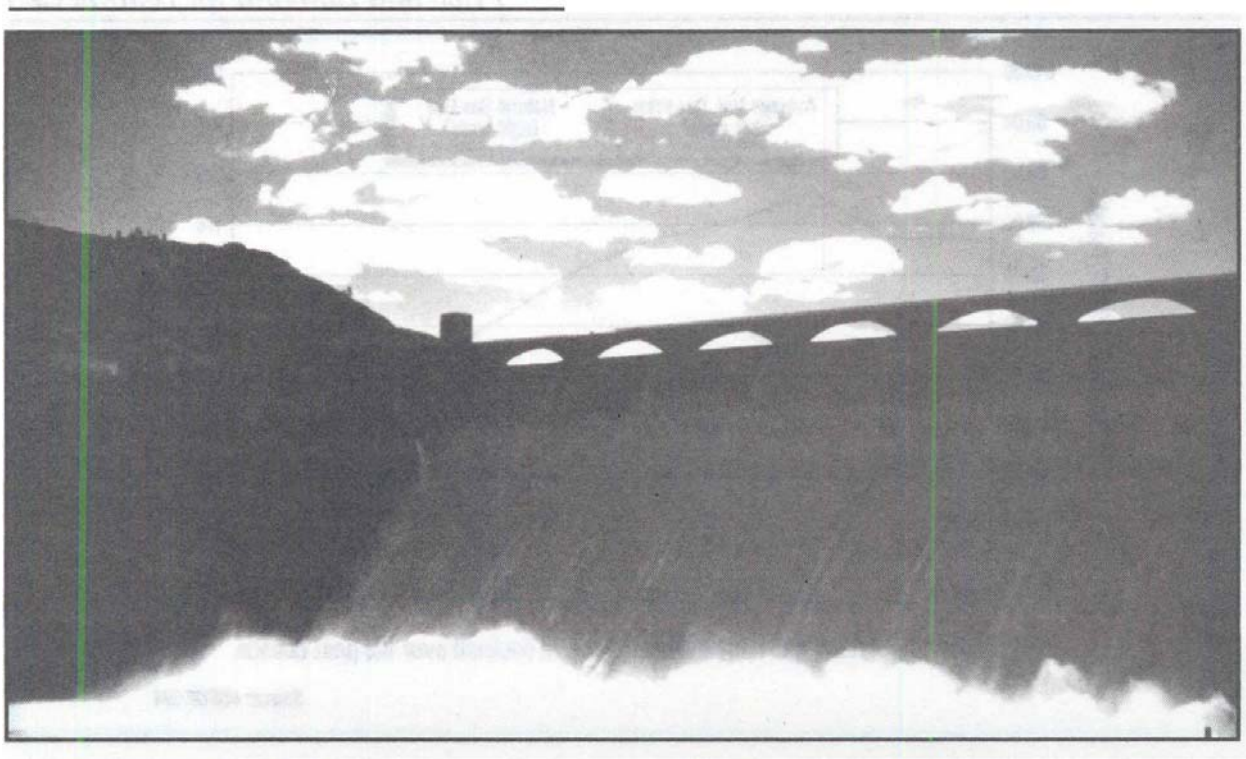
In Washington, we use a diversity of fuels to meet energy needs in buildings, agriculture, public facilities, and industry. When most people think of energy, however, they often focus on electricity and natural gas. This is no accident These two fuels account for more than two-thirds of our non-transportation energy use. We heat and light our homes and workplaces, run our appliances, computers, and pumps, and refrigerate our food with these fuels. Even brief interruptions in their supply are extraordinarily costly.

Gas and electricity utilities, whether private or public, are regulated monopolies. Private utilities are regulated by the state's Utilities and Transportation Commission (WUTC). Public utilities are regulated by local boards and elected officials. In either case, these utilities have an obligation to meet future demands placed on them and must plan several decades into the future.

In the past, this planning responsibility meant securing increasing supplies of gas and electricity. Today, however, the utilities find that conservation or improving efficiency is less expensive than building new plants and other facilities. From the consumer's standpoint, energy services such as heating, lighting, or mechanical motion can be supplied equally well through improved efficiency or new energy supplies. Therefore, gas and electric utilities have embarked on a new way to plan for meeting energy needs. Rather than comparing new power plants or natural gas supplies with each other to determine which is cheaper, they now compare new supplies with all the other ways of delivering energy services--e.g., insulation in attics, more efficient commercial lighting, or more efficient motors in industry. This approach is called "least-cost planning." It identifies the mix of supply and efficiency resources that will meet the demand for energy services at lowest cost, least environmental impact, and most reliability.

Least-cost planning reveals the full range of conservation and other resource options that may be less expensive than traditional power plants or gas supply contracts. Utility regulation is also changing, in recognition that these new ways of choosing resources may have different impacts on a utility's finances. New regulations attempt to align a utility's financial interests with active pursuit of its least-cost plan.

Hydropower has served the Northwest well. Now we must develop other energy resources.



This section discusses issues affecting energy for buildings, farms, and industry in four categories: natural gas, electricity, non-utility fuels, and general issues affecting buildings no matter what their energy sources. The recommendations made in these categories are expected to achieve improvements in statewide energy efficiency in these sectors of between 12 and 15 percent by the year 2010 (see the section on Monitoring Our Progress), with commensurate improvements in environmental impact.

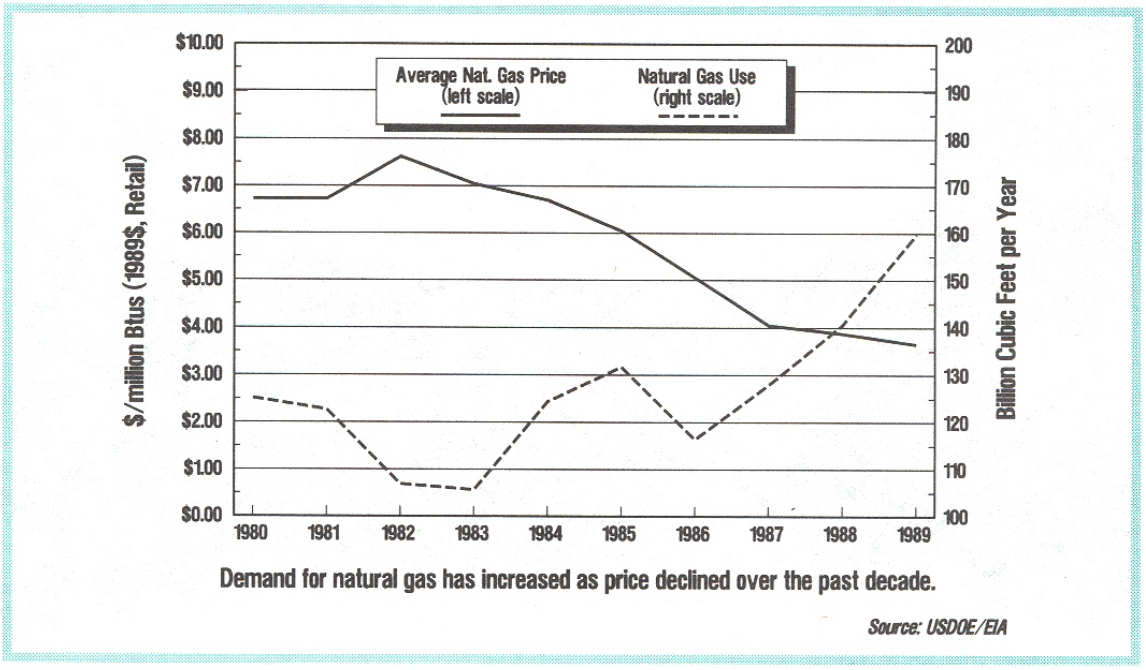
Natural Gas

Natural gas prices are currently at an historic low. Gas is also relatively clean burning. Both of these factors have encouraged widespread use of natural gas throughout the United States for residential space and water heat, as a vehicle fuel, and as a fuel for new electric power plants.

The natural gas industry consists of three separate components: owners of supplies, interstate pipeline companies, and local distribution companies or gas utilities. Beginning in the late 1970s and continuing through today, federal legislation and rules have focused on deregulating much of the natural gas supply and realigning regulation of the interstate pipeline delivery industries.

Deregulation allows large-volume natural gas users such as utilities and industry to shop for their fuel from the Southwest, the Rocky Mountains, or Canada. They also shop interstate pipeline companies to determine which can deliver it, at what price, and with what level of reliability (firm or interruptible). The impact of these changes on the gas business has been enormous. The adjustment period for utilities and their regulators may be one reason for slower implementation of least-cost planning.

Price and Demand for Natural Gas



Washington State's Natural Gas Industry

Washington currently has no commercially producing natural gas fields. Exploration for natural gas trapped in coal beds in the foothills of the Cascade Mountains may yet yield commercial gas supplies for Washington, but the magnitude of this supply and its cost remain uncertain.

Lacking its own supply, Washington relies chiefly on gas from Canada and the Rocky Mountain region. Physical resources in both regions appear adequate for many years; the issues for Washington State involve price, pipeline capacity, reliability, and growth of demand. The Committee also identified a significant and growing interrelationship between the electric and gas utilities as the former increasingly turn to gas as a fuel for generation.

Washington's current annual demand for natural gas is 160 billion cubic feet, with recent peak demands of 1.3 billion cubic feet per day. The two interstate pipelines serving the state, coupled with gas storage facilities, have sufficient capacity to meet our current demands. However, firm demand is projected by the region's gas companies to grow by 3 to 5 percent per year through the end of the century. This forecast does not include gas for new industrial use, for power generation, or for vehicle fuel. As the demand to use gas for electricity, space and water heating, and vehicle fuels increases, the natural gas pipeline system will expand. Gas prices will, in large part, depend on the magnitude of the expansion and the efficiency with which the new capacity is used.

Gas for electricity generation is particularly significant. Independent power producers in Washington, the state's utilities, and BP A are currently pursuing gas fired power generation at six facilities. In combination these facilities exceed 1100 average megawatts. While some of this generation would serve state and regional needs or be available for export, the facilities are expected to consume the equivalent of half again the total current statewide natural gas demand.

In short, the state's gas demand growth is prodigious, and will require expansions in pipeline capacity both north and south of the Canadian border, and possibly new corridors or rights-of-way. There is risk in this growth, particularly in relation to Canadian pipeline expansion and permitting and to United States federal responsibility for establishing the rates for new pipeline capacity. Assessing demand and developing new capacity, as required, is critical to the energy future of the state in the next 10 years.

BPA

In 1937, the federal government created the Bonneville Power Administration (BPA) to revitalize the stagnant Pacific Northwest economy with inexpensive hydropower from Bonneville Dam and other dams on the Columbia River system. Only the Pacific Northwest and the Tennessee Valley are dominated by federally managed electric power, of which more than 80 percent is generated in these two areas.

In the Northwest, the Department of the Interior or the U.S. Army Corps of Engineers operates the dams. BPA markets the power through a vast network of transmission lines, which represents 80 percent of all large lines in the Northwest. The network stretches from Canada to California. BPA sells mainly to publicly owned utilities and large power-using industries, and also funds and conducts significant regional conservation programs for its customers.

The Committee recommends making gas more available for use directly in residential space and water heating. This is a more efficient use of gas than combustion in a power plant to generate electric power to serve the same functions. However, we must balance thermal efficiency with economic efficiency. Gas lines cannot go everywhere and, even if they did, our electric system still requires new resources, a large fraction of which will be gas-fired. Therefore, it is also important to emphasize more efficient use of gas, even where it is the most cost effective and efficient fuel for the job. Cost-effective conservation programs, developed and implemented by natural gas utilities, are important. The Committee also places priority on cogeneration in gas power plants (using the thermal energy not converted to electricity to power some other industrial process).

The Committee sees three areas requiring special attention:

- Developing more comprehensive least-cost planning for gas utilities.
- Making gas and electric utility plans compatible, to ensure that the full range of interactions between the two energy supplies is considered.
- Providing more access to gas service so that consumers can more easily choose between gas and electricity. Gas service is simply unavailable in many sparsely populated parts of the state, as well as some of the rapidly growing "edge" communities of Puget Sound.

THE NORTHWEST POWER PIANNING COUNCIL

"Power Council" is the short name for this regional planning body set up by the U.S. Congress in 1980. It is responsible for developing plans that balance the region's need for electricity with the needs of fish and wildlife on the Columbia river system. These plans are developed with the assistance of the utilities, BPA, other agencies, and the governors of Idaho, Montana, Oregon, and Washington.
The most recent plan recommends that the Northwest's utilities pursue conservation and efficiency, renewable energy sources, and other generating resources. The Power Council is the only regional least-cost electricity planning body in the United States. Its eight members are appointed by the governors of the four states.

Planning for More Choices

Our increased reliance on natural gas in the near future requires that we act intelligently to maintain reasonable prices and reliable supplies. In recognition of the importance of gas in our near-term future, the Committee strongly supports the following actions.

- The state's gas utilities should work closely with WSEO and the WUTC to develop and implement comprehensive least-cost planning. Least-cost planning will ensure reliability of supply, as well as implementation of cost-effective conservation and efficiency programs for gas utility customers.
- Gas utilities should implement cost-effective conservation measures and programs in their service territories consistent with their least-cost plans.
- The state's electric and gas utilities should work closely with WSEO and the WUTC to integrate their least-cost planning. In many cases they are looking at the same fuel, the same pipelines, and many of the same end uses. The increasing overlap and interaction between the two industries creates questions of who pays for new pipeline capacity, what the long-term outlook for gas prices is, what impact new gas demands will have on the reliability of service to existing customers, and what the impacts might be if customers switch back and forth between the two fuels. Washington's gas and electric utility planners and regulators need to reach a new level of coordination, information exchange, and least-cost planning.

Because the state has had ample supplies of inexpensive electricity, many homes and businesses heat water and space with electric power. Opportunities to heat with gas have not been nearly as available, and "leap frog" development on the urban fringe is especially difficult to supply with gas service.

Most new single family homes are now being built with gas for space and water heat, at least where gas service now exists. New multifamily residences are generally supplied with electricity for space and water heat. Absence of local gas service can prevent access to cost-effective fuel choices, and extension of service into areas not now served may raise regulatory and policy issues. In the multifamily sector, use of gas in new or retrofit applications is complicated by venting, air distribution, and piping costs.

The Committee believes that many unexploited opportunities exist to improve the efficiency and cost-effectiveness of supplying space and water heat through the direct use of natural gas.

However, not all customers can be reached cost-effectively with gas lines; and not all end-uses can be converted practically or economically. The thermal advantage of using gas directly rather than in a combustion turbine may be clear, but the cost-effectiveness of using gas for space and water heat varies dramatically within Washington State depending on the price of electricity, climate, access to natural gas, degree of existing insulation, and the electric utility's growth rate.

Since many homeowners are already choosing to shift from electricity to natural gas to meet energy needs, the question is, "What more needs to be done?" The Committee is in agreement that good consumer information is definitely needed to support good marketplace choices. While the Committee is not allowed by its statute to "mandate the use of one energy source over another," we do favor a series of actions in this area.

- The Washington State Energy Office, in cooperation with the WUTC, utilities, Bonneville Power Administration, and the Northwest Power Planning Council, should provide a report to the Governor and Legislature that clearly identifies the nature and extent of the savings available from cost-effective fuel choice. Fuel choice represents a state-wide resource, but one that varies dramatically in magnitude within

the state. If this resource is to be pursued, information programs, line extension policy changes, and other efforts must begin to target areas of the state where direct use could save gas (when compared to gas-fired generation) and be cost effective for both electric and gas consumers. The principal goals are to assist the WUTC to develop reasonable and efficient line extension policies and to assist BPA and the Power Council to develop efficient and coherent programs for pursuing fuel choice in public utility service territories.

- Change the line extension policy of the WUTC to develop new pricing methods to permit recovery of costs from lower volume lines. This should be aimed especially at areas with high expected growth that would otherwise be served by electric space and water heat if gas is not available. This effort should be closely coordinated with local governments developing growth management plans to evaluate and include provisions for line expansion in areas not now served.
- Encourage electric utilities to consider fuel choice as a resource in their least-cost planning and to implement appropriate programs. One option might be to provide consumer information through bill stuffers or informational hotlines.
- Encourage BPA to review its new (fall 1992) experimental fuel choice program. In connection with the report described above, BPA should work with other Pacific Northwest parties to refine this program where it can be shown that fuel choice is cost effective and reduces the need to use gas for electricity generation.
- Provide clear information to support cost effective fuel choices. With the support and direction of the Bonneville Power Administration, WSEO operates several information clearinghouse programs. The Committee believes that a similar program supported by the state's gas and electric utilities could provide credible information to support free market decisions on the choice of heating fuel.

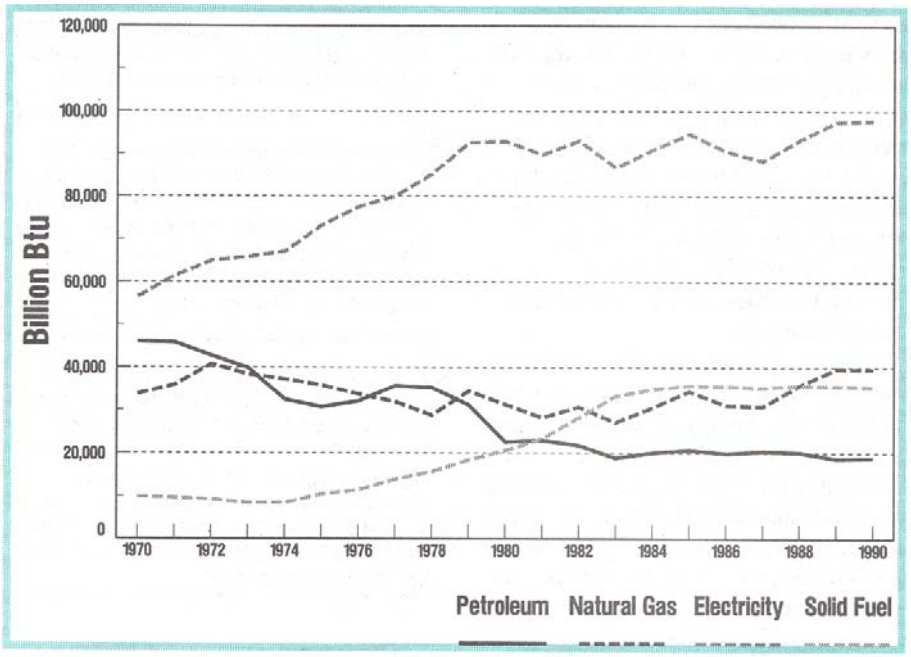
The committee discussed the idea of reducing barriers to gas services by expanding the number of providers, specifically by giving public utility districts authority to sell gas and encouraging municipalities to consider it.

Some members of the Committee felt this would promote competition and more rapid development of service in the unserved areas, and also increase utility support for cost-effective fuel choice.

Several members questioned whether a recommendation in this area was within the scope of the Committee. It was agreed that the Committee would report but take no position on this issue.

Gas Policy and Siting Issues

The Committee sees rapid near-term growth in gas demand as inevitable, given current prices for other fuels and environmental factors. We do not favor rapid growth in gas demand or over-reliance on gas as an energy strategy. On the contrary, our efforts are aimed at increasing the efficiency with which we use this fuel as its importance grows. We favor efficient use of gas through careful assessment of cost-effective fuel choice and enhanced least-cost planning that identifies opportunities for new efficiency investments.



Washington's Residential Energy Use by Fuel

Roughly $1 billion of investment in new interstate gas pipeline capacity is anticipated in the next decade in Washington State. Industrial users, local

distribution companies, and developers of gas-fired power plants all must plan at least three to five years into the future to reserve space on the pipeline to meet their needs. There are significant costs in buying pipeline space; there are uncertainties over associated Canadian expansion, as well as the pricing of pipeline services on both sides of the border. As we expand our use of gas, we need to keep in mind that this is not a resource that is either infinite or immediately available. Its costs and reliability will depend on how effectively we plan for its use and how efficiently we use it.

The Committee recommends careful attention to gas demand growth and the need for new pipeline and storage capacity. Complex transactions between private entities negotiating gas supplies will continue, but significant statewide growth in gas demand and the need for expeditious pipeline and gas storage siting in both the United States and Canada favor the following actions:

- In coordination with the state's electric and gas utilities and gas customers, WSEO should develop regular statewide estimates of natural gas use. Such estimates will guide siting decisions and ensure good coordination with government planning and siting officials in British Columbia and Alberta. It is important that market growth and capacity needs in Washington are accurately considered when Canadian decisions are made.
- Coal bed methane has the advantage of being an indigenous gas supply that can be developed without new interstate pipeline capacity. This resource should be closely monitored by WSEO and the Department of Natural Resources to determine its potential contribution and how to remove any obstacles that might discourage further development.
- The majority of the Committee's recommendations in this section have focused on improving the efficiency of natural gas use even as overall' demand for the fuel grows. To monitor the success of these recommendations, the Washington State Energy Office should develop indices to track the efficiency of natural gas use in the state.

Electricity

The Pacific Northwest electric system is unlike any other in the nation. In average years, the Northwest gets 62 percent of its electricity from abundant and inexpensive hydropower. Outside the Pacific Northwest, hydropower supplies an average of about 6 percent of electricity generation.

The bulk of Northwest hydropower is produced at federal projects and distributed by BP A, which owns the majority of the region's vast electricity transmission system. Bonneville maximizes the value of our extraordinary hydropower resources by using this extensive transmission system to distribute power to and between Washington's direct service industries and public utilities, which account for 72 percent of Washington electricity sales, and private utilities, which account for 28 percent of electricity sales. In addition, the transmission system permits BPA to market seasonal electricity surpluses through interties to California and the Southwest. About two-thirds of BPA firm power sales are to utilities and direct service industries in the state of Washington.

For at least a decade, the Pacific Northwest electric system has had a surplus of power. Our ability to sell surplus power to California and other states has kept the cost of electricity low in the Pacific Northwest. Conservation and other measures have delayed the need for new generating plants, which are both costly and controversial.

Complex Challenges

Economic and population growth during the last decade have exhausted our power surplus. In addition, our electricity system is simultaneously challenged by the need to protect endangered salmon stocks on the Snake and Columbia river systems, by rapid regional growth, by Portland General Electric's decision to phase out operation of the Trojan nuclear reactor, by growing concern over the cost of power from the WNP-2 reactor near the Tri-Cities, by the growing importance of constraints to transmission of electricity over the Cascade Mountains, and by pressure from outside the Pacific Northwest to accelerate repayment of BPA's federal treasury debt.

Ways to Conserve 1 Average Megawatt

Weatherize 3,000 single family homes
Weatherize 3,700 multifamily homes
Build 4,700 new single family homes to model conservation standards *
Build 1,600 manufactured homes to model conservation standards
Install 21,000 efficient water heaters
Retrofit 365 commercial buildings for energy efficiency
Build 440 new commercial buildings to model conservation standards
Install 300,000 compact fluorescent light bulbs

** Efficiency levels established by the Northwest Power Planning Council*

Reduced production from existing hydroelectric plants and the phasing out of the Trojan nuclear plant combine with continued regional growth to intensify the need for new electricity resources. However, public agreement on the need for new resources is in question, and has been since the Washington Public Power Supply System's bond default dominated news headlines a decade ago. As a Committee, we believe that the state faces a need for immediate and deliberate action to ensure a continued adequate, reliable, and low-cost supply of electricity. The challenges facing the electricity system will require timely development of a number of new resources: conservation and efficiency, renewable energy resources, cost-effective fuel substitution, and gas-fired generation.

The Committee feels strongly that action is called for now, and that progress must be made on the development of all of these new resources. This progress will not happen automatically, particularly in the case of conservation, renewables, and additional transmission. Successful development of any of these new resources will require coordination of action between both public and private parties. Our strategy is based on moving forward on all of these new resources, rather than focusing on just one. It is the combination of resources and the benefits of their diversity that will help make our electricity supply secure and cost effective.

Road Map to Solutions

The starting point for meeting these challenges is the Northwest Conservation and Electric Power Plan. This plan is written by the Northwest Power Planning Council (the Power Council), a body created by an Act of Congress in 1980, whose members are appointed by the governors of the four Northwest states. The Power Council's charge is to forecast electricity demand and develop a least-cost regional electricity plan for meeting demand while protecting and restoring the fish and wildlife resources of the Columbia River Basin. In response to these plans, BP A has developed some of the largest electricity conservation programs in the nation. Washington accounts for more than half the Northwest's electricity use and an even larger proportion of the region's growth. Thus, Washington's role is key to successful implementation of the region's power plan.

The immediate goals of the power plan emphasize expanding use of electricity conservation and efficiency technologies, improving transmission and hydropower turbine efficiency, using renewable resources such as wind that are cost effective or nearly so, employing high-efficiency biomass or natural gas-fired cogeneration, and pursuing strategies for backing up hydropower resources in dry years. Depending on the success of these efforts and the extent of Northwest growth, within a few years the region will need to examine more extensive development of renewable energy sources and additional thermal generation.

The plan also forecasts what portion of Washington homes may be heated by electricity or gas. While the Power Council has no responsibility over gas utilities, our ability to meet the goals of the plan requires attention to both gas and electric demand.

Meeting the Challenge of Conservation

Conservation and improved efficiency are the top priority resources, but they require extraordinary cooperation and millions of individual decisions. The Northwest Power Planning Council's plan calls for saving about 800 average megawatts (aMW) of energy in Washington before the end of the decade-enough to serve nearly 500,000 households. Although this 800 aMW of savings is available, cost effective, and practical, achieving such a bold target will require unprecedented cooperation among utilities, builders, industry, consumers, government, and regulatory bodies. The effort demands sustained and uncommonly effective leadership.

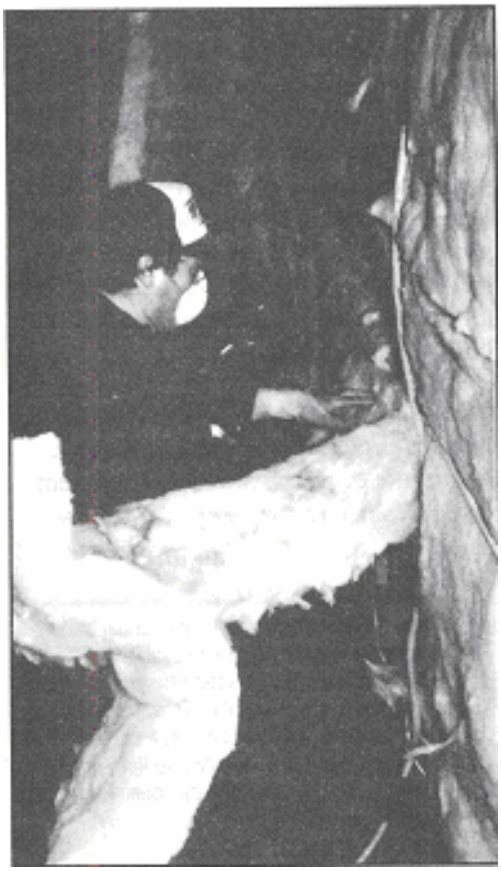
Like developing any other major new resource, conservation investments will cost money. To achieve the target set by the Power Council, the Pacific Northwest's utilities and electricity users face an expenditure of an estimated $7 billion by the end of the decade. Washington's share of the necessary investment is about $4 billion over 8 years. While this is a substantial expenditure, the cost of failing to meet the conservation and efficiency resource targets is even higher. The $4 billion price tag for cost-effective conservation compares to an estimated $6 billion price tag to meet electric loads without the conservation. In other words, achieving the Council's conservation targets will save Washington's electricity consumers $2 billion.

Electric utilities will be central actors in developing the conservation resource. They see the cost, impacts, and difficulty of adding new capacity; they know that they and their customers will benefit in the long run from pursuing lower-cost options. However, in the short run, we are all challenged by the need to raise rates slightly to pay for conservation.

Each utility, understandably, would hesitate to increase its own short-term costs for long-term regional benefits. The Committee feels it is important for all utilities and their customers to face these costs squarely and pursue conservation vigorously for the benefit of all the state's consumers.

- All cost-effective conservation and efficiency, opportunities should be pursued aggressively in both public and private utility markets. Utility and BPA conservation programs should recognize the importance of vigorous implementation by all parties.

Well-insulated buildings require less energy for heating and cooling.



Private Utilities. The state's private utilities are regulated by the WUTC and are required to file least-cost plans with the Commission. These plans are key tools that enable utilities to identify conservation resources and develop action plans for their development. In the case of regulated investor-owned utilities, the Committee believes that regulators should ensure that successful implementation of a company's least-cost plan is its most attractive financial course of action.

Historically, the cost of each additional kilowatt hour dropped as we built larger and more efficient hydropower plants and expanded the region's vast transmission system. Utility profits were most directly related to the amount of electricity they sold. Today, the cost of generating additional electricity is increasing. Improving the efficiency of electricity use is a cost-effective alternative to generating new electricity. This means that encouraging increased electricity sales by linking utility financial performance to sales volume is no longer the best way to keep electricity rates and consumer bills down.

The Washington Utilities and Transportation Commission, with Puget Power, has begun an experiment to sever the link between sales volume and profits. Under this experiment, Puget Power is pursuing conservation avidly. The company's focus has shifted from electricity as a commodity to energy services as a business. The results of the experiment, both positive and negative, should help to refine a regulatory approach that achieves the goal of aligning a utility's financial interest with its least-cost plan while ensuring that both stockholders and ratepayers are treated fairly.

The Committee strongly supports the effort to develop and implement regulatory approaches that align private utility's financial interests with the successful implementation of their least-cost plans. The Energy Office, WUTC, Puget Power, and other interested parties have cooperated closely in the current experiment. We believe it is vital to continue work with Puget Power and other utilities to achieve this objective.

Public Utilities. Unlike the remainder of the Northwest and the United States, Washington is dominated by publicly owned utilities. Most of them rely heavily (or exclusively) on Bonneville for electricity. They purchase electricity at an average rate that is very attractive and much lower than Bonneville's cost of acquiring new electricity generation. Conservation reduces BPA's costs of acquiring new resources on behalf of public utilities, but may also reduce the utilities' revenues based on the existing rates. To maintain the same revenues some utilities may have to increase their retail rates in the short run.

The Committee acknowledges that this can be a difficult situation for public utilities and their elected boards. But the Committee also recognizes that BPA's development of any new resources will increase the cost of electricity, and this increased cost will have an impact on rates.

Developing conservation and the other resources identified in BPA's least-cost plan will lead to the lowest increase in costs over the long run and the lowest impact on rates. Any other course of action, including inaction, will ensure that, over the long term, costs for electricity will be higher and rates will have to be raised more.

- The Committee believes that it is the responsibility of both BPA and its customer public utilities to cooperate in developing better incentives and market conditions to ensure the success of conservation investments in public utility service areas. While many of BPA's opportunities for success are concentrated in the major urban growth areas, such as Tacoma, Seattle, and Clark and Snohomish counties, BPA also needs to develop better opportunities for small public utilities and those with slow load growth. The recently established Conservation and Renewable Energy System (CARES), formed by seven Washington public utility districts, is a good example of a way to create opportunities by encouraging utilities to work collectively in developing conservation resources.

CONSERVATION AND RENEWABLE ENERGY SYSTEM (CARES)

Early in 1992, seven public utility districts received state approval to work together as a Joint Operating Agency-called CARES-to accelerate conservation and renewable energy projects within their counties. The utility districts cover Benton, Clallam, Franklin, Grays Harbor, Okanogan, Pacific, and Skamania counties. Others may join later. The group's main objective is to acquire Northwest energy resources that have the least economic and environmental costs. CARES will fund its energy projects with low-interest, tax-exempt revenue bonds and will likely sell BPA the output (or conservation) from these projects.

BPA will play a key role by offering innovative conservation, rate design, and billing credit programs that compensate Washington utilities for the full cost of developing regionally cost-effective conservation. In addition, BPA must make a long-term commitment to the program budget levels necessary to capture the targeted conservation. This commitment is necessary because it provides the confidence and security that utilities need to use their own bond financing authority (rather than the federal governments) to conduct conservation programs. Indeed, a long-term commitment is essential before utilities, educational institutions, and the conservation equipment industry will provide the staffing, training, and equipment necessary to meet the power plan's goals.

It is evident that BPA and the public utilities have mounted substantial conservation efforts and programs. BPA has helped states develop and implement new residential and commercial codes that reduce building energy use at low cost. BPA operates numerous education and training programs to ensure that there is a conservation "infrastructure" that the region can rely on. Nevertheless, the Committee must register its concern that the pace of conservation acquisition is lagging behind the Council's goals and that aggressive action is warranted. BPA program activities are particularly important in Washington State, where two-thirds of utility power sales are made by public utilities served by BPA.

State and Regional Issues. With respect to state and regional issues that will affect the success of conservation development, the Committee recommends the following actions:

- The state's commercial and residential building codes should be revised regularly to achieve the region's conservation targets. Washington's existing commercial code was adopted in 1986, but relied on energy standards developed in 1978. The state of the art in building lighting and space conditioning technology has been improved significantly since 1978.
- Based on the magnitude of the energy savings and low cost of securing this resource through building codes, BPA and the investor-owned electricity and gas utilities should include the cost of supporting code implementation (education, training, and enforcement) as a high priority for funding. The Committee also recommends that the WUTC consider expenses in support of code implementation as a part of the cost of developing conservation resources in a utility's service territory.

The Committee does not see support of code implementation as a long-term function of the utilities. Rather, the utility role-should be focused on assisting local governments to implement code changes. The appropriate level of this assistance should be reviewed consistent with the three-year code revision cycle and the regular code compliance studies done by the Department of Community Development.

As utilities develop conservation programs with BPA, the Committee sees an important role for WSEO to work with BPA and the utilities to develop simplified procedures for evaluating and verifying conservation performance.

- The Committee recommends that the Power Council, WSEO, WUTC, BPA, and utilities should cooperate in the development of a set of standard and uniform principles for evaluating the cost-effectiveness and verifying the performance of BPA and utility-financed conservation measures.

This is a vital task for a variety of reasons. Both BPA and WUTC need to know that utility-sponsored conservation programs are delivering actual savings at reasonable cost. It is important to understand that evaluation can become overly complex and that cumbersome verification requirements can prevent any efforts from going forward.

However, some evaluation is necessary to learn from our mistakes and successes; it should not block experimentation or serve as an obstruction to action.

- The state and region should take full advantage of all federal funds available for supporting conservation "technology transfer" and demonstration. The newly enacted National Energy Strategy (NES) provides significant federal support for improving the efficiency of government buildings and fleets. In addition, the NES provides strong support for technology transfer from federal laboratories to commercial markets. Both efforts require significant state matching funds to administer the programs. The Washington State Energy Office is well positioned to take advantage of these opportunities to advance energy efficiency in the region and test new technologies.
- The State Board for Community and Technical Colleges and the Higher Education Coordinating Board should develop curricula and provide training and certification programs for energy-related specializations (e.g., lighting designers, HVAC system designers, building commissioners). The achievements contemplated in the regional plan cannot occur without a workforce containing trained technicians and building operators. The Power Council and SPA have convened a group of conservation professionals and educators to develop a regional strategy to meet the need for education and training. Application of this strategy to Washington state educational institutions should serve as a good starting point to achieve this objective.
- The public sector represents about a quarter of the commercial floor space in the state, and analyses conducted by WSEO suggest that the potential for cost-effective energy improvements is about a third of current use. This is a significant potential and one that the state should vigorously pursue, both to reduce the cost of government and to set an example. Emphasis should be placed on existing programs and new programs developed, if necessary, to ensure that public buildings are constructed and operated to use energy efficiently.

Improving System Efficiencies

In addition to energy efficiency, there are several ways that the Northwest can improve the ability of its existing power system to meet growing needs.

Seasonal Exchanges. The Pacific Northwest electricity system has for many years sold spring surplus power to the Southwest - nearly all of that to California. As we move from surplus to deficit, overall Southwest sales are likely to decline; however, seasonal exchanges of energy are a very attractive option for both parties.

Seasonal exchanges are desirable because the Northwest's greatest energy needs are for winter heating, while the Southwest's are for summer cooling. Until recently, Washington and British Columbia have had huge spring surpluses that could be sold to California or stored during summer and fall to meet winter power needs. With new requirements to release more water in the spring and summer to aid survival of Columbia Basin salmon and other fish, we will be producing an even larger spring/summer surplus of electricity and creating an even larger fall/winter deficit. Ideally, we could trade electricity with California: we send power in the summer when they need it; they return power in fall and winter when we need it. Such exchanges do not create new energy, however; they just move it from one part of the year to the other.

Currently, BPA and several utilities in the Northwest have short-term seasonal exchanges with California. These exchanges allow us to improve conditions for anadromous fish and meet winter electric needs without building new generating plants. Stated differently, exchanges can mitigate the economic impacts on the power system from endangered species listings. If utilities, policymakers, and regulators can become comfortable with the possibility of long-term interdependence, these exchanges can significantly reduce the need for new generating capacity in many locations in western North America.

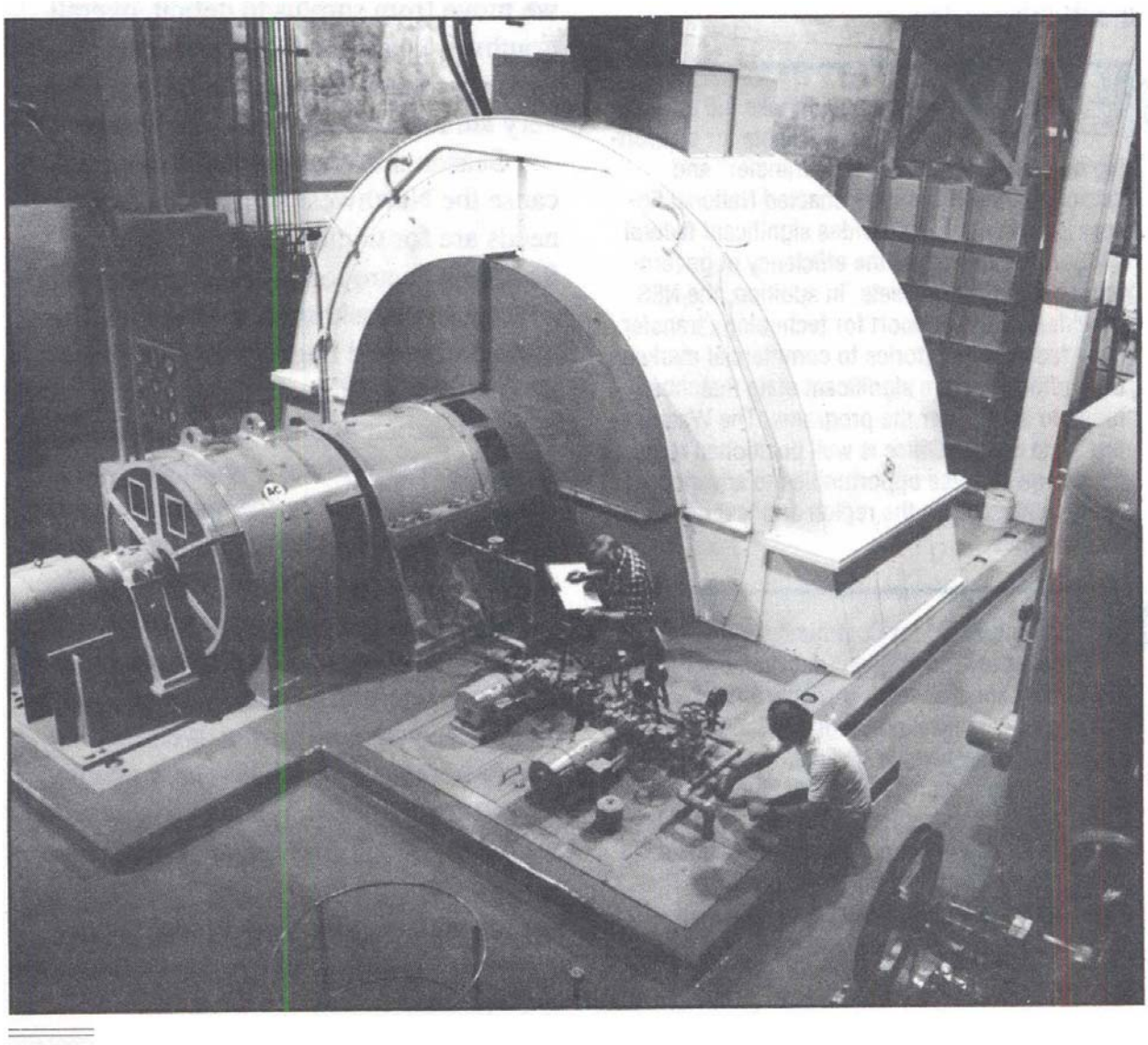
Long-term interregional power transactions will require demonstrable economic and environmental benefits for all parties. Developing and providing access to additional inter-regional electric transmission facilities is crucial to being able to make these exchanges.

- The Committee strongly recommends cooperative multi-state analyses of the opportunity for greater seasonal electricity exchanges along the Pacific Coast. In particular, this should involve BPA, BC Hydro, California regulators and utilities; Northwest utilities, and WSEO. Long-term exchanges will require cooperation, trust, and understanding among all parties. The potential economic and environmental advantages for the Northwest are very significant and should be addressed and pursued.

- BPA has expressed support for making exchanges more available to all Northwest parties through better access to interstate transmission lines. The Committee strongly supports this direction and believes that expanded use of the transmission system and seasonal exchanges should be broadly available. We encourage BPA to examine shared ownership options and improved access policies.

Other Improvements. Some important system efficiencies can be gained by upgrading turbines at dams, decreasing internal loads at power plants, and modifying the transmission system. Significant increases in generation are possible at virtually no environmental cost by updating older hydroelectric turbines. Other improvements at generating plants and in transmission systems are also important components of the region's power plan. These are low-cost, non-controversial options. They require that federal agencies include purchase of more efficient turbines in their budgets and install them in coordination with normal maintenance schedules.

Upgrading older hydroelectric turbines generates more electricity with no additional environmental cost.



- The Committee strongly encourages the U.S. Bureau of Reclamation and U.S. Army Corps of Engineers to ensure that turbine efficiency improvements are included in their budgets and promptly implemented in view of rising regional power demand and the low cost and impact of these resources.

Efficiencies can also be gained through the direct use of solar energy, district heating (using a centralized steam plant to deliver hot water and space heat to clusters of users, e.g., college campuses and industrial parks), and geothermal energy for space and water heat.

Choosing New Generating Resources

Improved efficiency is only part of the answer. It has slowed the growth in electricity use but has not stopped it. Furthermore, our current base electric resources are shrinking with the planned closure of the Trojan plant, increases in water flow for salmon species, and other hydroelectric system operating changes that can be expected as existing nonfederal hydro projects are re-licensed by the federal government. All of these factors diminish our existing capacity and magnify the need for new generating resources. The options include natural gas; renewables, such as biomass, wind, solar, hydro, and geothermal; coal; and nuclear power.

In the past, electric utilities typically built and owned their own power plants. Most existing generating capacity is owned by utilities. But new generation is typically completed by private developers, who compete in bidding to build power plants whose output is sold to utilities.

Gas for Electricity Generation. The majority of resource bidders (and the winners in recent bids) to both Puget Power and BPA have offered gas-fired generation. The price of electricity from new gas-fired power plants is currently lower in cost than new coal or nuclear power plants, or, for that matter, wind or geothermal resources. Gas-fired plants can more easily be sited near urban areas with less impact and less controversy than would be the case for coal, nuclear, or even small hydroelectric plants. Typical plants have long-term gas supply contracts from a variety of different sources. Gas can be used in single-purpose power plants, in industrial facilities that use gas for both process heat and electricity production (cogeneration), or as an intermittent resource to replace hydropower ("hydro firming") in dry years.

The preceding section on natural gas highlighted the issues relating to gas pipeline capacity and the need for efficient use. The more efficiently we use gas and the less we demand when the weather is coldest, the less pipeline and storage capacity we need to add. In this light, there are advantages to cogeneration, which is operated around the clock and with high efficiency, as the gas fuels both power generation and an industrial process. Most new gas-fired electric plants use cogeneration. But there are some exceptions. There is continuing interest among utilities and BPA in single-purpose plants that operate only in dry years (for hydro-firming). This could have positive effects on the electric system but negative effects on the gas system for both residential customers and industrial users of interruptible gas. These interactions need to be carefully considered in our planning efforts.

While the economic, environmental, and flexibility advantages of some gas generation are clear, the Committee views exclusive reliance on this fuel for new generation as both risky and avoidable if modest new commitments are made to renewable energy resources.

"Optioning" New Generation

Based on the many electric system uncertainties, the Northwest Regional Power Plan contemplates a strategy of "optioning" new generation. Optioning means that utilities or independent producers would do everything but build new power plants-they would design, site, and license them, but not build unless necessary. There was considerable agreement among Committee members that it would be quite difficult in Washington to site potentially unnecessary power plants. Even if one could site such a plant, possession of a site license for a gas-fired plant may not be worth much. The purchase of gas supply and pipeline is the key factor, and this is a potentially expensive contract for a developer, utility, or BPA to carry with no assurance that the generation is needed.

Renewable Energy Sources

The Committee favors prompt action on renewable resources to generate electricity. Nearly three-quarters of the region's need for new generation through 2002 is being met through planned completion of natural gas projects. This has advantages; but if we rely too much on gas generation, we risk losing the opportunity to develop cost-effective renewable sources.

Excessive reliance on gas entails several expensive risks:

- It may be difficult to gain support for siting many gas projects without parallel commitments to renewables that are consistent with the regional power plan.
- Electricity rates would be vulnerable to significant gas price increases.
- We might be forced to choose coal and nuclear generation because of a lack of experience in the Northwest with renewable energy alternatives.

Washington already has the highest proportion of renewable electricity generation in the United States, thanks to our hydropower. The state also has significant opportunities in wind, geothermal, biomass, small hydroelectric, and direct solar. These opportunities are amplified by passage of the National Energy Policy Act, which offers incentives for wind-powered and other renewable facilities sited in the next four years. The incoming federal administration clearly favors development of these resources and can be expected to encourage their use.

To cover our remaining needs and help develop cost-effective renewable energy technologies, the Committee strongly urges the state's electric utilities and BPA to pursue promising renewable energy options. These options may have higher initial costs, but will add to the diversity of electric supply in the Northwest, place no burden on strained existing and future gas pipeline capacity, have less environmental impact, and help to develop the experience necessary to make them competitive with coal and nuclear technologies, in the event that gas prices rise significantly. The value of these characteristics is easy to see, but hard to quantify.

The Committee recommends two strategies for pursuing renewable generating technologies:

- Utilities and BPA should experiment with targeted solicitations for renewable resources that are nearly competitive with gas. In the near term the Committee recommends that the state's utilities and WUTC seriously consider bids that are within a reasonable range of current gas generation costs. In the future, WUTC and the utilities may be able to better quantify the benefits of diversification, protection against rising gas prices, and lower environmental impact.
- The Committee recommends that the Northwest Power Planning Council, BPA, WUTC, and utilities move quickly to improve their ability to evaluate the full range of benefits from renewable energy technologies. The WUTC and BPA should assess acquisition strategies that explicitly consider fuel diversity, resource cost, environmental impact, system reliability, the risk of future environmental regulations on energy sources, and exposure to fuel price risk. There are a variety of methods available for obtaining these benefits: explicit valuation of external costs, targeted new resource requirements for renewables within defined cost parameters, expanded approval for demonstration project spending, or other methods.

The Committee sees the siting of renewable energy resources as a difficult challenge, notwithstanding overall environmental benefits. Wind generation may have aesthetic impacts, disrupt local radio and television reception, and harm birds of prey. Geothermal resources are likely to be found in volcanic areas of scenic beauty and recreational use. Neither resource has the air quality or land use impacts of a large coal-fired power plant. As described later in this report, we look to WSEO to provide some assistance to energy project developers and local and state permitting agencies in explaining the relative environmental characteristics and energy benefits of renewable technologies.

In the near term, wind and small hydroelectric technology appear to be the most cost effective of the renewables useful in Washington. Concerns over impacts on fish and other resources will limit potential additions of small hydro-electric generation. However, improving our permitting system should help develop those resources where negative impacts do not occur.

Wind Power. Several large wind projects are currently under consideration in Eastern Washington. Interested parties include Puget Sound Power and Light, Idaho Power Company, PacifiCorp, and Portland General Electric Company on one project and a consortium of public utilities called CARES (see sidebar) on another. The National Energy Strategy's special incentives for wind power development should bring wind projects close in cost to natural-gas-fired generation. It also appears that further development of wind generation technology should reduce costs.

Some renewable resources pose special problems that may require attention. On lands that benefit from open space or range land tax valuation, there may be significant tax vulnerability to an entire parcel if a single renewable energy project (such as a wind turbine) is added somewhere on the property. The Committee believes this may act as a serious disincentive for early experiments in Washington with renewable resources. Specific tax treatment may be required and would probably require legislation.

- The Committee believes that renewable energy projects such as wind turbines are consistent with designation of a parcel as range land or open space. Reassessment should reclassify only the fraction of space that a project uses.

Geothermal Energy. Eastern Washington has many areas with relatively high-temperature groundwater resources. The energy in this groundwater can be tapped with a heat pump to deliver low-cost heating services-provided water permits for this non-consumptive use can be made available.

The Committee considers warm groundwater resources a promising source of space and water heating in parts of Eastern Washington. However, today these resources are largely unavailable because of water permitting rules that classify even systems with closed loops as consumptive water uses. This treatment by the Department of Ecology should be changed to provide for the protection of water resources while capturing the value of these energy resources. A general permitting approach with standard requirements and conditions would help remove the current barrier to development of this resource. All potentially developable geothermal resources, including those suitable for power generation, need further investigation and support.

Coal and Nuclear Power

The Pacific Northwest region currently relies on coal and nuclear power to meet about 25 percent of the region's electric energy needs. Most coal generation is located in Wyoming and Montana. In Washington, we also rely on the existing Centra1ia coal project and on power purchased from out-of-state coal generation. In the Pacific Northwest electricity is generated from nuclear fuel at the Trojan plant in Oregon and WNP-2 on the Hanford Reservation near the Tri-Cities in Washington. .

In the 1970s and much of the 1980s, power system planners expected to meet the bulk of the new demand for electricity with new coal or nuclear plants. In the current environment, neither new coal nor nuclear power has been competitive with gas-fired generation or with conservation programs. Moreover, the existing Trojan plant is being phased out by 1996 because of high operating costs and uncertain reliability.

Nevertheless, the Power Council anticipates the need for some decisions on coal and nuclear projects by 1995. If the region is successful in meeting aggressive conservation targets, and if gas prices rise minimally, existing resources are modestly affected, and growth is below the plan's medium-high case, these decisions may be easy ones. But this is a long list of uncertainties, and in some cases (for example, medium-high regional growth and sharp gas price increases) operating coal and nuclear plants could be needed before the end of the century. To have such plants in operation by 2000 will require decisions by mid-decade.

Future coal plants could be quite different from those with which we are familiar. New "fluidized bed" or "gasified" coal plants can be built to operate quite cleanly, and can be much smaller than they once were. While fuel is available and operating costs are low, overall costs of power generation, including recovery of original construction costs, are above those for gas generation. Under federal clean air legislation, coal plants require "best available control technology." There is also the risk that coal plants may be further discouraged by federal or regional actions to reduce carbon dioxide emissions.

The unfinished WNP-3 reactor at Satsop and the WNP-5 reactor, now being dismantled, shown during construction.

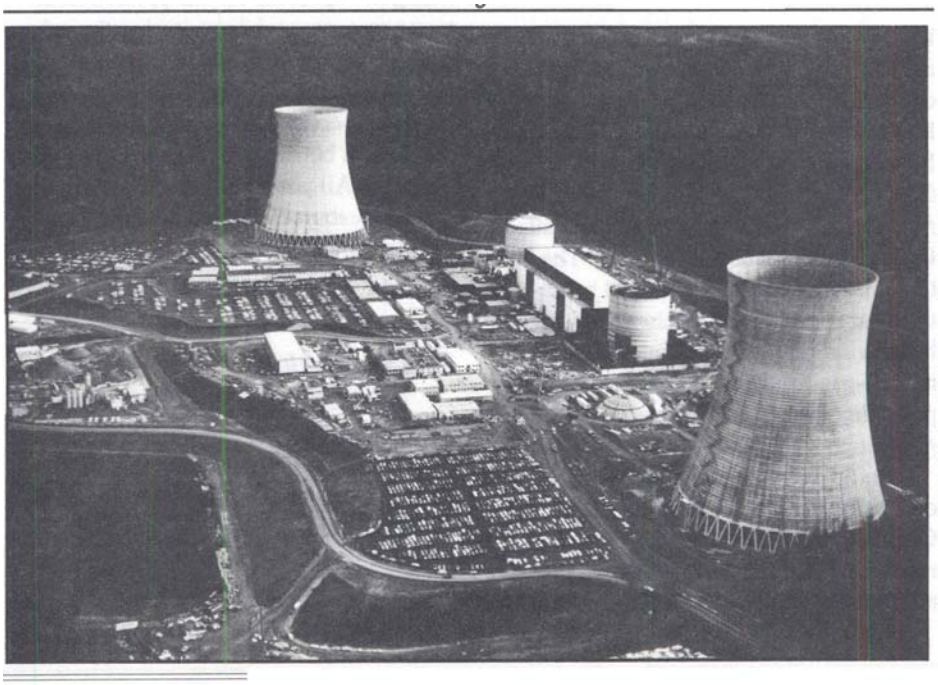


photo courtesy of Washington Public Power Supply System

Potential nuclear projects include the partially completed WNP-l and WNP-3 as well as advanced nuclear technologies under current development by the nuclear industry.

This strategy has focused on actions that will help us make the decisions on coal and nuclear power we may face by mid-decade. The Committee emphasizes the immediate need to accelerate efficiency programs, regional exchanges, and development of cost-effective renewable resources. But 1995 will still be a significant decision point for assessing our success in these areas.

The Committee paid specific attention to the current status of nuclear power. The Board of Directors of Portland General Electric has determined that the Trojan reactor will be phased out by 1996. Facing the need for a major steam generator overhaul-a multi-hundred-million-dollar investment-the company concluded that other alternatives might have lower cost and greater reliability. The Washington Public Power Supply System currently operates the WNP-2 reactor near the Tri-Cities. There is national concern over rising nuclear plant operating costs and competitiveness with gas generation; WNP-2 is not immune to these pressures.

The Supply System also owns two partially completed plants in mothballs at Satsop and on the Hanford reservation. Each could be completed for between $1 and $2 billion, according to current estimates, and their output sold to BP A. Completion of one or both units is considered in some scenarios in the regional power plan. BP A's Administrator has indicated that completion of these plants is not now considered to be economically attractive and that the probability of restart is slim. He has indicated that he will decide whether to dismantle or complete the units in two years, after the current BPA rate case is complete and there is better information on gas prices, conservation program performance, and salmon recovery measures. In the meantime, each unit costs about $5 million to maintain in mothballs, a small fraction of BPA's $2 billion annual costs, but still a significant amount. It would also be expensive to dismantle the plants-$50-150 million after usable equipment is salvaged. There is an understandable desire to resolve the status of the projects.

When the Committee raised these issues, it heard strong public support for immediate dismantling. Several members of the Committee agreed with this position, called the plants dubious assets at best, and pointed to Trojan's planned closure as evidence that even fully operational plants may have trouble competing with gas generation. The majority of the Committee, reviewing the range of uncertainties in electricity planning, agreed with BPA's judgment on resolving this issue in two years. In reaching this conclusion, the Committee understands that the recommendation may be at odds with strong public sentiment. In that light, we believe a timely unambiguous decision needs to be made and urge the BPA Administrator to provide a definitive decision within two years.

The Committee views new nuclear technologies as meriting continuing review and assessment. These technologies should be seen to compete in the marketplace with gas, coal, renewables, and conservation.

Non-Utility Fuels

The preceding sections have focused on energy supplied by natural gas and electric utilities. Both of these fuels are provided through an infrastructure which is managed centrally by utilities, and which is in some cases regulated by the state. Both the natural gas and electric utilities are charged with the obligation to provide energy services to customers, and, as we have emphasized in this report, plan to meet these obligations with least-cost plans for new resources.

A sizable portion of Washington's non-transportation energy demands are met with fuels other than electricity and natural gas. Approximately one-third, or 220 trillion Btu per year, of non-transportation energy is supplied by petroleum, wood and wood derivatives, and coal. Most (more than two-thirds) of this energy is used by industry, but a significant portion of space heating energy needs in the commercial and residential sectors are met with non-utility-supplied fuels. These are marketplace, commodity fuels for which there is no centralized resource planning or price regulation. Nevertheless, there are substantial cost-effective opportunities for the users of these fuels to improve their efficiency. Beyond the impact building energy codes have on the efficiency with which these fuels are used, the Committee is not recommending that the state intervene in these marketplace decisions. However, for consumers to make informed decisions about the efficient use of these fuels, information must be made readily available.

The Committee recommends the following actions:

- Information describing practical opportunities to improve the efficiency of buildings using petroleum, coal, and wood should be made widely available to homeowners and building operators.
- Focus local and state government actions on improving efficiency in public buildings. A large proportion of non-utility-supplied fuels used in the commercial sector goes to public buildings. Funds available at the federal and state level to improve energy efficiency in public buildings should be focused on improving efficiency in the use of non-utility-supplied fuels.

Improving the Efficiency of Buildings

Implementing Energy Codes for New Buildings

Building energy codes are enacted to ensure that new residential and commercial buildings are constructed to use energy as efficiently and cost-effectively as possible. These codes represent an important efficiency resource for both the electricity and natural gas systems. To ensure that these savings are achieved, the Committee believes it is appropriate for both types of utilities to contribute to implementation support (education, training, and enforcement) for revisions to these codes as they are enacted. For the investor-owned natural gas and electric utilities, the WUTC should consider such contributions as conservation investments. Such utility support should not be indefinite or be a replacement for the funding of code enforcement by local jurisdictions. Rather, this support should complement local funding and its need and magnitude should be reviewed consistent with the three-year code revision cycle and code compliance review done by the Department of Community Development.

State and federal programs subsidize weatherization for low-income citizens.

Energy Efficiency for Existing Buildings

Efficiency improvements in the existing building stock, both residential and commercial, can offer substantial savings opportunities. Often, efficiency improvements that are cost effective to building occupants go unmade, even if utility conservation programs are available, because buildings are leased or rented. Building owners do not pay the energy bills and the renters who do pay the bills have no equity position in the buildings. If practical and cost-effective improvements were required at the time buildings changed ownership, this resource could be captured. In addition, the initial cost of these measures could be minimized if their costs were capitalized in the building sale.

The Committee believes the State Energy Office should work together with appropriate state and local agencies, the utilities, and the real estate industry to develop programs for capturing efficiency opportunities in the existing building stock at time of resale. A key element of such programs should be educating the lending and financial communities to more accurately reflect the value of energy savings features in the appraisal and valuation of buildings.

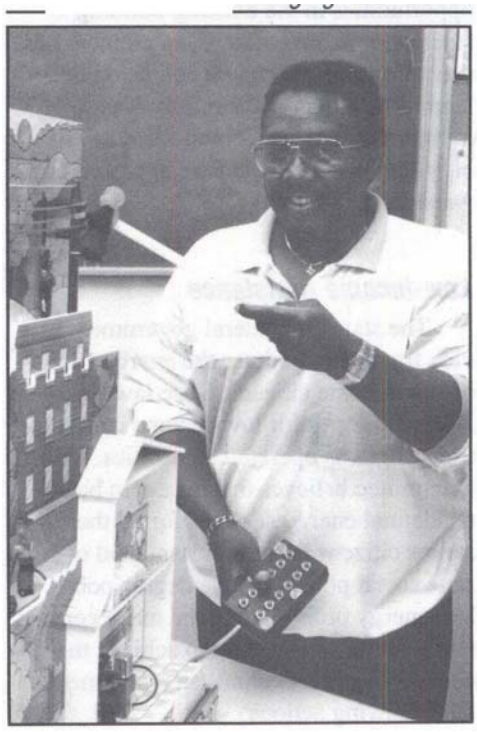
Low-Income Assistance

The state and federal government provide funding to address the energy needs of low-income citizens. State law establishes a priority for low-income conservation programs operated by utilities. The Committee believes that access to basic residential energy services for all the state's citizens is an important goal of state social policy. To the degree possible, energy policy should be made consistent with this goal. To help achieve this consistency, the Committee recommends the following actions:

- State and federal funding that addresses the energy .needs of low-income citizens should be continued.
- Direct the Department of Community Development to work with the State Energy Office, the Office of the Attorney General, and the electric and natural gas utilities to ensure that low-income weatherization programs address energy savings for the largest number of low-income citizens possible, and that full advantage is taken of all available federal assistance programs.

Historically WUTC has permitted utilities to make payments for low-income weatherization up to the value of the avoided cost to the utility of expected energy savings. The Committee recommends that WUTC continue this policy and examine the cost - effectiveness test applied to this conservation to clarify any outstanding issues concerning the level of these utility payments.

Energy education begins in elementary school. To understand today's complex energy challenges, adults also need exposure to new and changing information



Energy Education

No strategy can be successful unless the people charged with carrying it out know what to do. If the state energy strategy called for building one huge thermal generating plant, miles of big power lines, and high speed rail into every neighborhood, the number of people necessary to accomplish the tasks would number in the thousands. This strategy, however, and the transportation, growth and power plans that are being done concurrently are even more demanding. Each requires millions of people to take tens of millions of individual actions for the plans to succeed. The new world of energy is no longer a field only for specialists to fashion technical solutions for our energy needs, but a participatory world in which all citizens have to make informed choices about how energy is supplied and how they choose to use it.

Washington State residents will define their energy future by the decisions they make about how they heat and light their buildings, produce their goods and services, and get to and from their work places. They'll need good information. An important goal of this strategy is to educate our citizens about energy and its monetary and environmental costs. For instance, in transportation, no fuel is clearly superior for both fuel economy and reduced environmental impact. As market factors help determine this choice in the coming years, clear and objective information will help consumers make good decisions. Other changes to make our transportation system more efficient (e.g. HOV lanes, car pool, transit) will succeed only to the extent that commuters choose to use them. Energy education can help motivate people to rely less on their cars.

Energy education is a process that attempts to change energy use behavior now and in the future. It encompasses awareness building, motivation for action, and information on technology and lifestyle choices that affect energy use. Preparing consumers to make the right choices will help us meet our conservation goals.

Education programs fall into four major categories.

- K-12 education: Ensuring prudent future energy use
- Higher education: Training tomorrow's professionals, including architects, engineers, technicians, and teachers
- General education: Making our citizens energy literate
- Targeted education: Building skills in specific populations such as construction trades and building operators

Each of these categories is important to Washington's energy future. A vibrant educational program will require the involvement of state and local agencies, utilities, public and private educational institutions, nonprofits, and business and professional associations.

The Committee recommends the following actions in energy education:

Encourage and support education activities by state and local, public and private organizations to increase the energy literacy of the people of Washington State. Support efforts by utilities and environmental groups to build public understanding of energy and its use in their homes, businesses, industry, and transportation.

The legislature should provide funds to the Superintendent of Public Instruction for producing the second phase of the Energy, Food and You curriculum. Public and private utilities should put together a consortium to produce and supply packets of energy education materials to teachers who use the curriculum.

WSEO should survey the utilities and building operators and advise the Higher Education Coordinating Board about what programs should be developed to train technicians and system operators for conservation and efficiency work in the residential, commercial, and industrial sectors. According to the Northwest Power Planning Council, if the region is to meet its conservation goals 5,000 additional trained people will be needed.

The state's universities should examine their engineering and architecture programs to ensure that tomorrow's professional graduates are prepared to design facilities of all kinds with wise energy use in mind. Professional standards and mid-career training should include the connections between energy efficiency, operating costs, and good design and construction.

Higher education programs should include energy education units in pre-service and in-service teacher training.

3. Protecting Our Environment

Environmental problems and their solutions are closely tied to how we develop and use energy. The Energy Strategy Committee has emphasized energy efficiency in all sectors, alternative fuels, and renewable energy technologies. If we are able to implement the full range of the strategy's recommendations, the state's economy and environment will be the better for it.

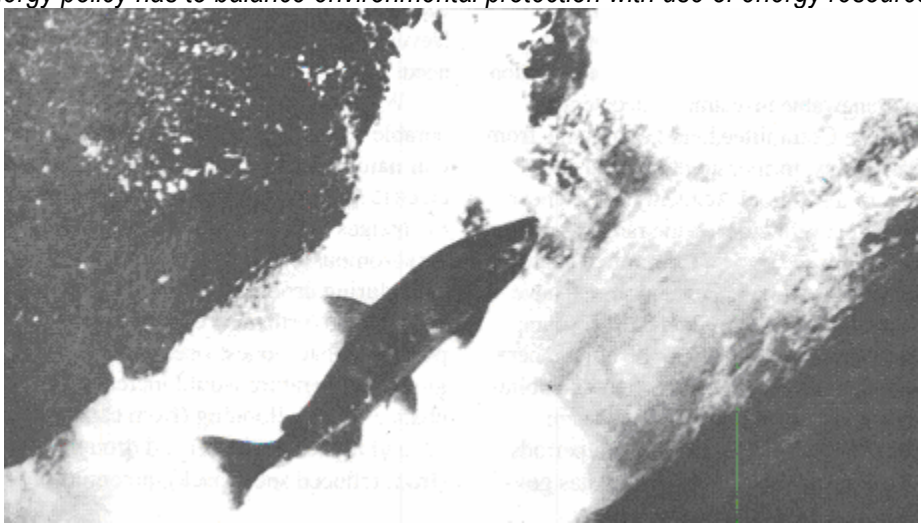
As the Committee developed recommendations for electricity, gas, and petroleum policy, it examined the many interactions between energy and environmental policy. For example, it is clear that we must balance the long-term needs of our hydroelectric system and those of anadromous and resident fish. Similarly, we must design our transportation system and its fuels with attention to air pollution, which threatens health and visibility; congestion, which chokes our economy; the sources and impacts of the fuels we use; and the space a transportation system requires. When we consider alternative fuels, we must contrast the costs and environmental benefits of those fuels with other options. We face the same responsibility when we compare the environmental characteristics of wind or geothermal resources with coal or nuclear power.

In this chapter, the Committee covers some additional issues not addressed in prior sections: global warming and its impact on energy planning; and mechanisms to better integrate environmental decision making, regulation, and planning.

Carbon Dioxide and Global Warming

Carbon dioxide *($C0_2$)* results from the combustion of any fuel. It is nontoxic, but may contribute to global warming.

Energy policy has to balance environmental protection with use of energy resources.



Computer models of world atmosphere and weather patterns suggest that the carbon dioxide created by the burning of fossil fuels, and other trace gases released by human activities, are likely to raise the overall global temperature. Temperature change would, in turn, play havoc with patterns of rainfall and drought. Most scientists predict wider variations in local weather.

Policymakers don't know whether global warming is happening, what the local consequences might be, or how quickly they might occur. The science is almost impossibly complex, leaving us to choose between action that could be unnecessary and inaction that could be dangerous. We do know that if we must take further action, fossil fuel consumption would need to be reduced and conservation and renewable investments accelerated.

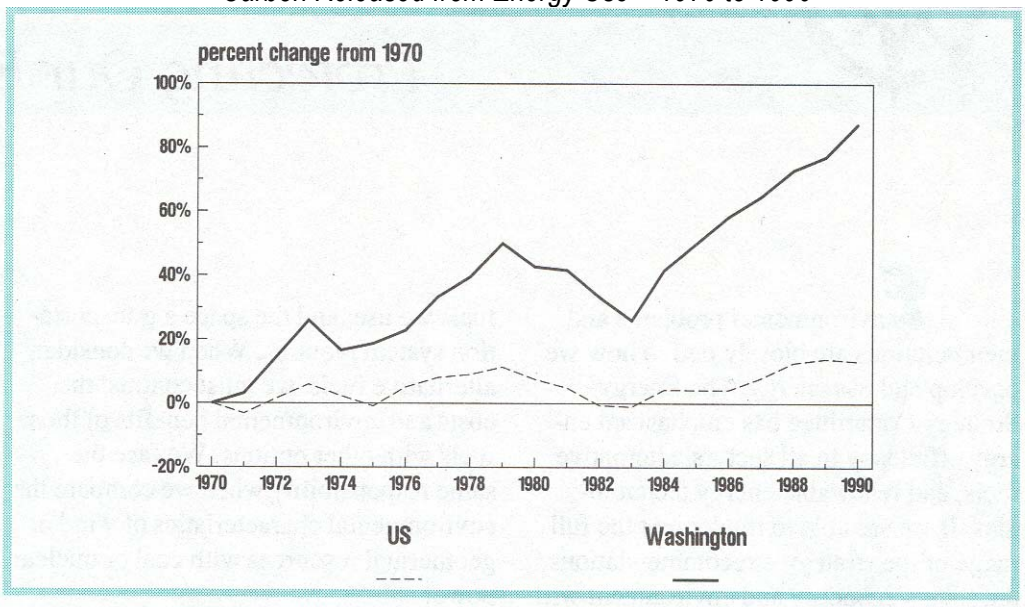
The Committee heard comments from Dan Evans, former governor and chairman of a National Academy of Sciences panel that reflected a wide range of opinion on this issue. The Committee heard that carbon dioxide concentrations have risen dramatically in the last 100 years; that there is more C02 in the atmosphere now than at any time since human habitation; and that high levels of $C0_2$ are linked in polar ice samples with periods of great warmth. The United States government has acknowledged this problem (as have many other nations) by signing a

treaty that encourages stabilization of current $C0_2$ emissions at 1990 levels. This issue is a concern of the incoming United States administration, which could initiate more aggressive action.

Washington must also pay attention to this issue. Because of our strong regional growth and rising energy demands, the state's total carbon dioxide releases have risen 40 percent in the last 10 years, while those for the United States as a whole have risen only 5 percent. It is to our advantage that our per capita $C0_2$ releases are still about 20 percent below the national average because of our reliance on hydropower. Nevertheless, the overall upward trend needs to be addressed.

Washington may be particularly vulnerable to changes in the weather pattern. Our natural resources and hydro-based electric system are extremely susceptible to changes in snow and rainfall patterns. Anadromous fish runs are gravely threatened during droughts. Utility bills would rise. In the Northwest, climatologists hypothesize that modest rises in average global temperature would increase the chance of both flooding (from early runoff and higher sea level) and drought (from reduced snow pack), potentially affecting fisheries, agriculture, forestry, hydropower, and marine businesses.

Carbon Released from Energy Use – 1970 to 1990



This state energy strategy calls for numerous actions that will contribute to greenhouse gas emissions stabilization. We believe the goals and programs we have identified can reduce the growth in carbon dioxide releases by between half and two-thirds by 2010. The emissions growth rate would be reduced to less than the rate of population growth, reversing the trend of the last decade, when growth in emissions significantly exceeded population growth. This also would maintain our per capita emissions below the national average. This reduction will require effective implementation of the many actions in the strategy. If the state grows less rapidly or we identify further opportunities, we can expect even greater results.

The preponderance of public comment, and some Committee members, favored a more aggressive target-to at least stabilize emissions at current levels. The Committee was somewhat frustrated by its inability to identify additional measures that might stabilize or reduce total statewide emissions. Our estimates and forecasts of statewide emissions of $C0_2$ and other greenhouse gases are very rough. This is particularly true with respect to the non- $C0_2$ trace gases (such as methane), for which we have no data. This makes the evaluation of the full range of options impossible.

In light of strong public comment on this issue, the importance of the issues involved, and our inability to identify cost-effective measures that might reduce emissions further, the Committee strongly recommends prompt identification of measures to achieve stabilization.

WSEO should develop a more comprehensive inventory and projection of carbon dioxide and other greenhouse gas emissions and identify additional measures beyond those recommended in this strategy that might be considered to

meet a range of more stringent targets. These should include non- $C0_2$ greenhouse gases that may be quite important. The analysis should emphasize the most cost-effective measures for meeting alternative targets, and should also identify those actions that lie outside the energy sector, but that could be implemented practically and quickly.

The Committee strongly recommends that this analysis be completed as soon as possible, preferably within one year. The Committee was pleased to see that WSEO competed with other states for U.S. Environmental Protection Agency support to conduct a portion of this work and has this project underway.

The Committee recommends pursuing cost-effective measures for conservation and wiser energy use in general. That is, these measures make sense whether there is global warming or not. No additional measures have been proposed specifically to address global warming, although the Committee believes that the assessment described above should identify additional actions.

The Committee also believes that our Congressional delegation should support a national $C0_2$ and greenhouse gas emission target. Policies set at a national and international level can achieve the desired environmental results without putting Washington's national and international companies at a competitive disadvantage. The Committee also examined the concept of a state or national tax to be leveled on emissions of carbon. This proposal was discussed in the last presidential election and is under serious consideration in many nations. Ideally, such measures should be applied at the broadest institutional level. In recognition of the debate on this issue and its potential impacts, the Committee recommends that WSEO assess effects on Washington-positive and negative-from imposition of carbon-based taxes.

BPA has recently attempted to pass along the risks of possible future carbon taxes or control costs to resource developers from which it buys power. This is one mechanism that may deserve further consideration.

WHAT'S AN EXTERNALITY?

An externality is a cost not captured in the price of a product. If a power plant emits air pollution that does environmental harm, those costs are "externalities." Economists usually argue that the price of a product should include all costs of production, including impacts on the environment. As the region looks at adding new resources: coal or gas-fired plants, wind turbines, and other resources; environmental impacts are definitely considered. Whether these impacts should be translated into price is a matter of much debate.

Environmental Regulation and Energy Decision Making

Energy decisions inevitably involve tradeoffs. Where one action clearly has lower environmental impact, if the technologies are equal in cost and equally easy to build, the choice between them may be simple. But some impacts are hard to measure and compare. For example, choosing between the environmental impacts of electric and gasoline-fueled vehicles may not be so easy. Local air emissions from an electric vehicle are negligible, but overall emissions could be larger or smaller than those from a gasoline vehicle, depending, in part, on the source of electricity. Emissions from a gasoline-fueled car depend on the mileage of the car, combustion technology, and the chemistry of the fuel, all of which are changing rapidly. When we compare energy and environmental alternatives, it is important that we look broadly, so that we do not mistakenly solve one set of problems by aggravating another.

There is considerable support on the Committee for incorporating the environmental costs and impacts of energy use in energy decisions. Unfortunately, this is a complex subject and it isn't easy to develop effective methods for using and calculating these costs. Western states have begun to estimate these costs, consider them in energy planning, and include them on power they import. California and Nevada require utilities to choose generating sources that have the lowest combined economic and environmental costs, even if the power is purchased from out of state and its impacts are out of state. The utility commission in Oregon has proposed inclusion of such costs, and the province of British Columbia is considering such measures.

Because of the interconnected nature of our systems, the worth of resources being built in Washington can be changed by values imposed by other states. For example, California utilities could choose to build more wind plants instead of trading for coal power from the Northwest. Full consideration of environmental impacts of energy decisions is an issue with which Washington utilities, government, and regulators need to come to grips.

The Committee identified several ways to improve our ability to guide energy and environmental decision making.

- The Committee recommends that SPA and the state's electric utilities incorporate Quantifiable costs, including environmental costs, into least-cost planning and modeling. Significant environmental impacts that cannot be quantified should be incorporated in resource selection criteria and decision making. Our

current strategy emphasizes efficiency, expanded use of gas, and renewables. Comprehensive methods for evaluating environmental costs should be well developed before this region faces the need to consider new coal or nuclear power plants.

- The Committee also recommends more comprehensive assessment of environmental costs in all energy sectors, not just electricity planning.

As we begin to incorporate environmental factors and tradeoffs into energy planning, it is important that we create a marketplace for achieving our goals at least cost.

The Committee recommends that the state's environmental regulators emphasize the use of creative market-based strategies to achieve environmental objectives at least cost with maximum choice. For example, the Department of Ecology should ensure that the state clean air implementation plan, required under federal clean air legislation, permits vehicle buy back programs, which allow industrial firms to buy and dispose of older, more polluting vehicles in exchange for air quality credits. In Washington, older wood stoves may present similar opportunities.

In pursuing cleaner air quality, WSEO and Ecology should pay special attention to the use of oxygenated or reformulated gasoline and catalytic preheating. Because a large fraction of emissions occurs during cold start and warm-up, electric preheating of the catalytic converter can bring major air quality benefits without the costs of developing major vehicle retrofits.

4. Siting Energy Facilities

Siting energy facilities has never been easy. Siting the range and number described in this strategy poses an especially difficult challenge. As the Committee reviewed problems of energy siting, two key conclusions emerged. The first is that the state needs to examine ways to make existing siting and permitting processes work better, while considering the merits of legislative changes. The second is more fundamental: the credibility of any siting process depends on developing greater public confidence in energy decision making, greater public involvement in energy planning, and greater consensus on the risks and rewards of a state energy strategy.

A recent Elway poll (fall 1992), pursued in part at the Committee's recommendation, revealed a cavernous, but understandable, gap between the views of energy planners and the public on energy needs. The state began the 1970s with a very ambitious effort to complete five large nuclear plants, finished one, defaulted on both bonds and public confidence, and still found itself with an electricity surplus. In fall 1992, half of those polled by Elway disagreed that the region is facing an electricity shortage, and three-quarters of that group said they do not believe Northwest energy planners who might argue otherwise.

Building more transmission lines-a key to avoiding costly and potentially unnecessary generation-is considered unacceptable or undesirable by a substantial minority (41 percent) of the public.

The state clearly has a credibility and consensus problem, whether these numbers are correct or not. Nevertheless, the Committee believes that great strides have been made in including the public in energy decision making. One notable example is the Northwest Power Planning Council, which conducts an extensive program to foster public participation in its activities. The Power Council is unique in the United States. It has produced more than a decade of sophisticated regional planning, public participation, and a consensus on priorities that is unparalleled in the United States and, possibly, the world.

Another notable example is the collaborative approach to regulatory policy issues being undertaken by Puget Power. This approach permits the Attorney General's Office of Public Counsel, environmental organizations, industrial user groups, the company, and others to resolve key policy issues in a public process before placing final proposals before the courtroom-like environment of the Washington Utilities and Transportation Commission.

Construction of new energy facilities requires a lengthy siting process.

This Committee's recommendations emphasize public education and involvement in energy planning for all fuels, experiments in new methods of utility regulation, and collaboration between interest groups for a common end. If both the public and public interest groups are involved and their concerns are addressed in planning and other processes, then siting-whether streamlined or not-gains credibility and support. If public issues are not addressed in planning, then the siting process becomes the one easy place to seek redress. We hope that this energy strategy and

its implementation have provided and will continue to provide means for public involvement in energy planning across all fuels.

Even with public support, timely siting of the facilities called for in this strategy requires a rational regulatory process. The addition of renewable resources such as wind turbines and low-temperature geothermal projects will require special treatment and serious public involvement. Thermally efficient cogeneration projects and small and large gas-fired power plants will need permitting, and the growth in demand for gas pipeline capacity plus needed electrical transmission lines will require early public involvement and coordination between levels of government.

Energy facility siting in the state of Washington is not a coordinated process. All layers of government-local, state, and federal-may be involved in siting a particular facility. In many cases, permitting may involve many independent agencies in all three levels of government. Each agency sets its own schedule for review and may include in its review the same issues raised-and potentially resolved-by others. The consequence can be chaos, as easily for a project that is needed and environmentally sound as for one that is not. The members of the Committee see an ambiguous and dysfunctional licensing environment in the state of Washington for the resources included in this strategy.

In the 1960s, utilities expected to build significant numbers of large coal and nuclear power plants. These plants typically ranged from 600 to 1200 megawatts in size. Because of the problems of overlapping jurisdiction and uncoordinated permitting, the state created an Energy Facility Site Evaluation Council (EFSEC), similar to those in many other states, made up of representatives from 13 state agencies and affected local governments. EFSEC hears an application, considers objections, evaluates alternatives, and recommends a direction to the governor within a specified time. The council's jurisdiction does not extend to generating plants under 250 megawatts, which were not under serious consideration at the time the statute was written, or to electric transmission lines, which were not particularly controversial when EFSEC was established.

In the 1990s, utilities and independent power generators are emphasizing smaller units, fueled not by coal or uranium but by natural gas, wind, or geothermal steam. These facilities are mainly sited by local governments. These governments may look at such plants from very narrow perspectives or very wide ones. EFSEC is likely to site one proposed plant, a large gas-fired project in Longview, in spring 1993, but most current projects are below EFSEC's 250-megawatt threshold.

Local governments have been struggling with utility planning issues for years. With the recent passage of the Growth Management Act, local governments now have a framework for such planning and a requirement to coordinate their efforts. These governments must determine that infrastructure resources such as roads, sewers, electricity, or gas-are sufficient to meet the demands of new developments. They must also identify corridors for routing essential services. Faced with the possibility of local controversy over power plants and transmission lines, these determinations may be hard to reach, particularly in the populous counties of Puget Sound.

Some project proponents -particularly renewable resource developers—do not have the deep pockets necessary to pass through a long sequence of permitting processes, anyone of which could halt the project or force its redesign. Wind or geothermal developers also may not be able to move their facilities to less controversial locations.

The Committee agreed that, in the near term, it is of paramount importance to make existing rules and procedures function as smoothly as possible. There is considerable opportunity to improve the permitting process without any new legal authority. The Committee believes that adequate time should be allotted to do a good job with siting impact review, but that good project management by the agencies of local and state governments can cut substantial time off the siting process.

Siting processes for energy facilities need to address five points: 1) the need for the facility; 2) safety and health impacts; 3) environmental impacts; 4) economic impacts; and 5) alternatives to the proposed approach. It will be important to work with project developers and concerned citizens to ensure that the scope and schedule for state and local permitting agencies are coordinated, allow for consideration of these issues, and lead to expeditious decisions. This will benefit both project proponents and critics.

The Committee sees an important role for the incoming governor and the State Energy Office in assisting rapid review of those programs and projects that implement the state energy strategy.

- The new governor should instruct his cabinet to focus its attention on implementing the provisions of the state energy strategy using existing rules, but avoiding costly duplication and ensuring rapid decision

making. Agency directors should establish reasonable deadlines for each major decision point in the siting process. This should include impact studies, report preparation, public hearings, and decision making.

- The Washington State Energy Office should take the lead in ensuring that supply (and conservation) projects consistent with the strategy receive fair and rapid treatment by the many state, federal, and local agencies that must review them. In particular, WSEO should assist state and local decision makers by providing them with unbiased technical information on the characteristics of these projects. The agency is currently working with BPA and local governments to develop model local ordinances that might help cities and counties assess potential energy projects.

The Committee examined the action of "optioning" in the chapter on Buildings, Farms and Industry. BPA or utilities could reimburse developers for the cost of designing, licensing, and permitting a power plant in advance of knowing whether the electricity would be needed. As we noted earlier, we do not believe this proposal will work in Washington. However, we see some advantages in examining generic impacts of technologies such as wind energy, low-temperature geothermal, and power and gas transmission projects before specific sites are selected. This may be a way to reduce the time and cost of permitting while improving the credibility of the process.

- The Committee recommends that BPA and the investor-owned utilities consider funding generic impact investigations, particularly for renewable technologies, so as to narrow the number of issues requiring study during actual siting. Results of such a study could be used as components in environmental impact statements.

Meanwhile, the Committee believes that overhaul and reassessment of state and local siting procedures for energy facilities is necessary.

- The Committee recommends that the legislature form a siting review panel similar to the State Environmental Policy Act Review Panel of 1982-83. The panel should be given one year to develop revised state siting procedures and legislation to implement them. The panel should address mechanisms for early and effective public involvement, build a consensus for action, and continue to work for the resolution of issues in the planning process. The panel should include representatives of the environmental community, consumer groups, utilities, project developers, and state and local agencies.

While the Committee is reluctant to recommend additional study on issues, we believe siting requires thoughtful and timely consideration. The issues are too complex to resolve in the context of this overall strategy.

Measuring Our Progress

As Washington's population grows, energy use can be expected to climb. The state's total energy expenditures will climb as well. The recommendations included in the state's energy strategy are intended to improve the efficiency with which we meet our growing demand for energy services; to moderate the growth in energy costs to Washington's homes and businesses; and to achieve improvements in Washington's environmental quality.

To ensure that the goals of the strategy are being achieved, the Committee recommends that a measurement and evaluation plan be developed and implemented by the State Energy Office. This plan should provide a means to track the response to the Committee's recommendations, as well as indices of energy performance to track the effects of the strategy.

If energy use and expenditures grow in lock step with population, Washington would be forecast to use approximately 1,700 trillion BTU of energy in the year 2010 and to pay a total energy bill approaching 12.3 billion 1990 dollars per year. Based on the index of per capita energy use, the recommendations included in the strategy are estimated to save 189 trillion BTUs annually by the year 2010. This is equal to 15 percent of the state's current energy usage. Dollar savings in energy expenditures are estimated to be 1.8 billion 1990 dollars annually, equal to 20 percent of current total state energy expenditures. Reduction in annual carbon dioxide emissions is estimated to be 13.4 million tons, equal to about 15 percent of current annual energy-related carbon dioxide emissions.

Energy efficiency by 2010 in buildings, farms, and industry is expected to improve by between 12 and 15 percent over what is forecast to happen in the absence of the strategy. Energy efficiency in the transportation sector is estimated to improve by 24 percent.

The Committee recognizes that no single index such as per capita energy use can do a comprehensive job of capturing the state's energy performance and trends in energy efficiency. Neither can a single index provide much management information about whether the overall goals of the strategy are being met, and if not, what factors might need to be addressed to improve the strategy's success. Consequently, the measurement and evaluation plan should establish a set of performance indices that are specific to energy sectors, sensitive to economic conditions, and sensitive to substitution in fuels. These indices should, to the degree possible, rely on currently collected information.

5. Role of the Washington State Energy Office

The State Energy Strategy Committee was directed by its enabling legislation to pay specific attention to the future role of the Washington State Energy Office. The Committee focused first on the energy needs of the state and its citizens. In the process of developing Washington's energy strategy, we identified some key responsibilities for the Energy Office that are essential in making the strategy a success, and which the office is well prepared to carry out.

WSEO was created by Executive Order in 1975 in the aftermath of oil supply interruptions and amid concerns over the long-term supply of electric energy in Washington. The agency's responsibilities were broadened by statute in 1976 and again in 1981 to include reporting to the state legislature on energy issues, emergency management for both oil and electricity interruptions, provision of energy information to the public, and administration of federally funded state energy conservation activities, largely in public buildings.

In 1990 responsibility for staff support of the Energy Facility Site Evaluation Council (EFSEC) was transferred to the Energy Office. In 1991 the legislature added several responsibilities, including a statewide transportation demand management program, a public facility conservation and cogeneration program, and support for this Committee's development of the Washington State Energy Strategy.

The Energy Office's activity was significantly influenced by the passage of the Pacific Northwest Electric Power and Conservation Act in 1980, which mandated least-cost regional electricity planning. BPA sought support from the states for its early conservation programs, particularly those related to new residential energy codes and demonstration projects. These were designed both to meet the requirements of the first Northwest Conservation and Electric Power Plan and to develop a strong energy conservation infrastructure in the region.

WSEO played a technical support role for regional electricity conservation and demonstration programs through the 1980s. Most of the funding for these programs came from the BPA. United States Department of Energy funding for state energy conservation programs declined over the 1980s. At the same time, proceeds from oil company price control violation suits were allocated to Washington, as they were to all other states. These "oil overcharge funds" have supported a large proportion of WSEO's programs since 1985, but are now steeply declining as few suits remain to be settled.

As the agency moves into the mid-1990s, it has become one of the most sophisticated state energy agencies in the nation. It is a recognized leader in conservation program development, technical support, and implementation. Much of this conservation work has been done on behalf of BPA. About 40 percent of the agency's budget is derived from BPA. Another 20 percent is provided by the oil overcharge funds. Of the agency's $55 million biennial budget (over half of which is passed through the agency in the form of grants to local governments, public facilities, and other agencies and parties), less than $2 million is provided by Washington State general funds. Much of the $2 million in direct state support is required to match federal funds, leaving about seven staff positions in the agency directly supported by the state general funds.

Future Role of the Energy Office

The relatively limited level of state general fund support has forced the agency to be creative and entrepreneurial, qualities the Committee sees as strengths to be used and built upon in implementing the Washington energy strategy. For example, during the development of the strategy, WSEO sought and successfully received federal support to implement committee recommendations on integrated gas and utility planning (from the U.S. Department of Energy's Oak Ridge National Laboratory) and on a state inventory of greenhouse gas emissions (from the U.S. EPA).

The Committee summarizes the role of the Energy Office in the state energy strategy as follows:

- Improve and realign current programs to fit the energy strategy.
- Play a leadership role in state government to support the development of new energy resources that are consistent with the strategy.
- Take a supportive role with other state agencies, local governments, schools, and others to integrate energy issues in their plans and decisions.

- Conduct a number of studies; track certain technological changes; and prepare a number of reports that will help provide for timely and informed future decisions concerning energy.

Existing Core Programs

The Energy Office currently operates a range of programs that are consistent with the goals and recommendations of the strategy. Programs focusing on electricity conservation include support for residential and commercial energy codes; appliance efficiency; provision of information about energy efficiency opportunities in new schools, commercial buildings and industry; residential builder training; and support for educational curricula.

In addition, the Energy Office works closely with the Power Council, BPA, the state's investor-owned electric and natural gas utilities, and WUTC, in the development of least-cost plans and the design and evaluation of conservation programs.

Recently, new programs aimed at the transportation sector to reduce commute trips, aid in the purchase of clean-fuel vehicles for the state's public fleets, and assist in the development of natural gas vehicle refueling stations have begun at the direction of the legislature.

The Energy Office is charged by the legislature with major responsibility for the development of conservation in state-owned buildings and K -12 schools. This is an important effort that can save the state money over time.

The Committee believes that while these programs are all consistent with goals and recommendations of the strategy, the Energy Office should carefully examine them and realign and reprioritize its programs to use available staff and budget resources to implement the directions of the strategy as cost-effectively as possible. The Committee also strongly supports the entrepreneurship shown by the office in the past and recommends that this skill be focused on capturing federal and other available funds to help support implementation of the strategy.

One of the key roles performed by the Energy Office under its existing core programs is support by way of coordination and technical analysis for utilities, planners, regulators and other central parties in the energy industry. The Committee believes that the Energy Office is performing this role well with the state's investor-owned electric and natural gas utilities, WUTC, and the petroleum industry. However, the Committee believes that the working relationship with the state’s 60 or more public utilities needs better definition and improvement. The Energy Office should place a high priority on developing a closer working relationship with public utility managers and a shared understanding of the benefits of BPA and Energy Office programs to both the state and the utilities.

Committee member Ted Coates confers with Amy Bell, WSEO director.

The Committee suggests that WSEO's work for BPA and its customer utilities is most appropriately focused on activities that span the entire state, such as residential and commercial code development, training, and enforcement, and on providing centralized technical information (such as commercial and industrial hotlines). WSEO can also bring experience and expertise in some key areas-such as conservation program evaluation-that can benefit expanded utility conservation programs.

The Committee recommends that the Energy Office place special emphasis on the following areas when reviewing and realigning its programs:

Energy Efficiency Education, Training, and Technical Information. Provide programs to support the training and technical information necessary to accomplish both the conservation goals established in the regional power plan and the energy efficiency objectives of the state energy strategy. This should consist of technical information clearinghouse services like those currently funded by BPA for the commercial and industrial sectors; education, training and information to support commercial and residential building code development and implementation; and support for educational curricula for use in local schools.

Help Utilities Verify Conservation and Efficiency Efforts. Provide assistance and support to utilities in the evaluation and verification of conservation programs. WSEO has developed expertise working with BPA to evaluate and verify the magnitude of conservation program savings. BPA's requirements in this area have not always been clear and may represent a stumbling block towards acquisition of these resources. WSEO should work with BPA and the utilities to simplify mechanisms to ensure that accurate, comprehensive evaluation is accomplished but is not so expensive or so cumbersome that it acts as a barrier to developing conservation.

Coordinate Information Efforts with Utilities. To improve statewide energy education and information, WSEO should take into consideration existing local educational programs and incorporate the resources of the utility community in this effort. WSEO should incorporate local needs and tailor information programs and materials to be valuable and useful for local utilities and school districts.

Provide Assistance to Small Public Utilities. Provide support to Washington's smaller public utilities to help identify opportunities to develop conservation and renewable energy proposals for BPA. Specific opportunities in wind, geothermal energy, and conservation are likely to exist in the service territories of smaller utilities. Assistance made available from WSEO could help ensure that these opportunities are recognized and that practical steps are found to develop them. This assistance should also be made available to CARES, a newly formed joint operating agency of seven public utilities.

Make Government a Model of Energy Efficiency. Provide leadership and technical support to make state .and local publicly owned buildings models of energy efficiency. Public buildings make up nearly a fifth of the state's commercial building stock and have significant potential for cost-effective energy improvements. The Energy Office should act as a facilitator between utilities and public sector agencies to ensure that needed efficiency projects occur. Additionally, WSEO should provide assistance and support to the Superintendent of Public Instruction, Educational Service Districts, and local districts to ensure energy efficiency in the design, construction, operation, and maintenance of schools.

Take Advantage of Federal Programs and Funding. Federal energy and environmental policies increasingly favor state, private, or state/private partnerships with matching funds to accelerate the transfer of new energy technologies to the marketplace. Washington may be especially well positioned to take advantage of these incentives because it has a federal power presence; regional planning that favors conservation and renewables; industries with new technologies under development (e.g., the Ballard fuel cell, Boeing's solar cell program, or Microsoft's potential role in changing demand for travel); and a reasonable consensus on a state energy strategy. WSEO should seek such opportunities and act as an intermediary to help develop public/private partnerships in the full range of energy-related activities that are likely to garner increasing federal support. To accomplish these goals, the Energy Office should work with other state agencies, local governments, utilities, and industry and should be prepared to provide the matching funds necessary to advance both state and federal interests.

Promote Transportation Demand Management. WSEO should promote successful implementation of recent legislation requiring employers to develop commute trip reduction plans. WSEO technical assistance to local governments, the Commute Trip Reduction Task Force, and businesses should focus both on the successful implementation of telecommuting, transit passes, parking plans, and other strategies to reduce commute trips, and on the evaluation of the impact of these strategies.

The remaining three themes guiding the Energy Office's role in the energy strategy build on the existing core programs. The Committee has focused on these themes because they require additional effort and emphasis from WSEO. Building on its core programs and existing statutory responsibilities, the Committee recommends that WSEO fulfill the following roles in implementing the strategy.

Leadership in State Government

Some of the recommendations included in the strategy will not succeed without a strong state voice in their support. While many state issues such as water and air protection, wildlife enhancement, fisheries enhancement, recreation, and transportation have strong advocates within state and local government, prudent action on energy issues has not had the benefit of clear state advocacy. In particular the Committee recommends the following roles:

Streamlining Tough Decisions. WSEO must play a leadership role in ensuring that conservation and energy supply projects that are consistent with the policies identified in the state energy strategy receive fair and expeditious regulatory treatment by the many state, federal, and local agencies that must license or approve them. The state ~so needs its Energy Office to provide unbiased technical information on the characteristics of energy projects licensed by local and other state agencies. This will be particularly important for renewable energy technologies. The Energy Office should work with other agencies within state government to ensure that energy benefits are addressed together with other important natural resource considerations.

Coordination with Other States and Provinces. Decisions made outside Washington will affect our energy future. These decisions may involve natural gas supplies and pipelines in Canada, electricity markets to the south, and water management in Canada. WSEO's role should be to work cooperatively with governments to the north and south to exchange information, identify opportunities for coordinated action, and assist, where necessary, in the execution of cross-boundary transactions. Coordination with other government agencies-state, federal, and Canadian provinces-will also help Washington take advantage of experience gained by others so that mistakes made elsewhere can be avoided in Washington and successes achieved elsewhere can be adapted to Washington.

Emergency Planning. Provide support to the governor and legislature in the timely response to energy supply emergencies. Refine and maintain the state's energy emergency plans. Work with other state and local agencies, federal emergency planning authorities, the energy industry, and the media on the development and testing of these plans.

Prompt Analysis of Energy Issues and Trends. Provide energy policy advice and support to the governor, legislature, and Power Council members. Work with legislative staff to provide information and analysis of the full range of energy issues and the recommendations of the energy strategy. Maintain records of energy usage and expenditure trends in the state.

Monitor and Report on Progress. Develop appropriate forecasts and analyses to monitor progress toward implementation of the recommendations in the state energy strategy and on the impact these actions have had on statewide energy performance. Report results to the legislature and governor on a biennial basis.

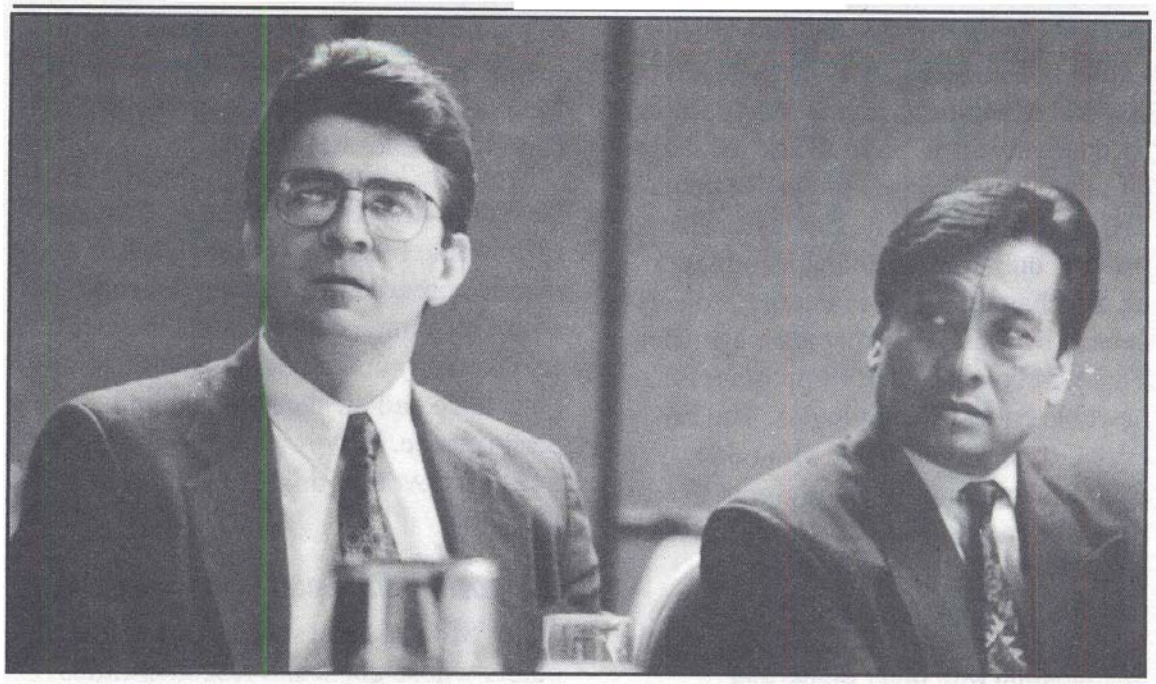
Supporting the Lead Role of Others

WSEO can add value to the efforts of others whose goals and responsibilities are only indirectly related to energy. These agencies or organizations have the responsibility to achieve state objectives in such areas as land use planning, environmental protection, transportation, education, utility rate regulation, and others. Plans and actions to achieve these objectives will have an impact on energy use, efficiency, the environment, and energy costs. While energy is not the primary concern of these agencies, the social benefits of their plans and actions can be increased by recognizing and including energy impacts.

Department of Community Development (DCD). DCD is responsible for providing support to local governments in the development of land use plans under the Growth Management Act. These plans will inevitably have a significant impact on energy use and energy facility siting. The Energy Office should work with the Department of Community Development and other state and local agencies to encourage consideration of energy impacts, efficiency opportunities, and facility siting in the development of growth management plans.

DCD is also responsible for administering the state's programs providing energy assistance to low-income individuals. This assistance includes home weatherization programs, as well as assistance with utility

Committee members Corey Knutsen and Ray Corpuz listen to discussion.



bill payments. The Energy Office should work with DCD to ensure that low-income programs provide the maximum energy benefits to the most people.

Superintendent of Public Instruction (SPI). SPI develops model educational curricula for the state's public schools. Energy components should be included in these curricula. The Energy Office can assist SPI and other state educational authorities in accomplishing this objective. The Energy Office should also work with utilities and energy companies at the local level to adapt statewide curricula to local issues and needs.

Department of Transportation (WSDOT). Cooperate with and support the work of the state Department of Transportation to ensure that the state's transportation dollars are spent in ways that increase energy efficiency, improve congestion problems, and improve air quality. The experience WSEO has developed in electric and gas least-cost planning should help develop decisions in transportation that ensure state funds are spent effectively. The Energy Office should also work with DOT to evaluate and document the impact of commute trip reduction strategies, develop a model telecommuting program, and assess the consistency of state transportation-related taxes with state transportation, environmental, and energy policy.

Washington Utilities and Transportation Commission (WUTC). Continue to work closely with the state's electric and gas utilities and WUTC on regulatory issues, the development and implementation of least-cost resource plans, and the integration of electricity and natural gas planning. Provide advice and information concerning the energy impacts of regulatory changes intended to facilitate least-cost plan implementation, and the broadened availability of natural gas service.

Work with WUTC to identify the potential for telecommunication technologies to substitute for transportation.

Work with WUTC to evaluate the energy impacts of freight company regulation and assist in developing proposed regulatory modifications if practical improvements can be made to achieve better overall fuel efficiency.

Department of Ecology. Work with the Department of Ecology to refine the state's clean vehicle fuel policies and programs and integrate energy impacts into these programs. Work with Ecology to ensure that geothermal resources in Eastern Washington are not precluded from development.

Real Estate and Lending Community. These industries provide a key to ensuring that existing buildings are made as energy efficient as possible. The Energy Office should work with representatives of the real estate and banking industries to develop means to recognize the value of energy efficiency measures in buildings and encourage the installation of cost-effective measures at the time of sale.

Departments of Revenue and Licensing. Work with these departments and other executive and legislative agencies to review the consistency of the state's energy-related taxes with the state's energy and environmental policies. In addition, work with these agencies to develop a proposal to change the current vehicle registration excise tax system to encourage the purchase of more fuel efficient and less polluting vehicles.

Informing Future Decisions

The energy strategy recommends that a number of specific analyses and reports be completed to help guide energy-related decisions to be made in the near future. Each is described below with a statement of its purpose and an estimate of the date by which the Committee believes the report should be completed.

Fuel Choice. A report, as described in Chapter 2, that can guide the utilities, BP A, and WUTC on fair and equitable fuel choice programs. (24 months)

Strategy for Greenhouse Gases. A state greenhouse gas emissions inventory and forecast, and an analysis of policy options available to achieve greenhouse gas emission reduction targets. These reports are described in Chapter 3. (12 months)

Results of Alternative Vehicle Fuel Programs and Demonstrations. Reports to the legislature covering the results of alternative vehicle fuel experiments for energy use, air quality benefits, infrastructure requirements, and regulatory issues. These reports are discussed in Chapter 1. (Annual, if appropriate)

Monitoring Progress. A report to the governor and legislature on the status and impact of the strategy. This report should include tracking and monitoring of progress on efficiency goals as well as the explicit recommendations in each issue area. (With WSEO Biennial Energy Report)

Implementation of the Committee's Recommendations by Washington State Government

This strategy recommends significant changes and additions to state programs and policies that affect energy. Some of these recommendations, for example in the energy facility siting area, could require statutory change. There are also recommendations that could require decisions by state regulatory agencies, such as the WUTC. However, the Committee did not identify the need for statutory changes in the enabling legislation of the Energy Office.

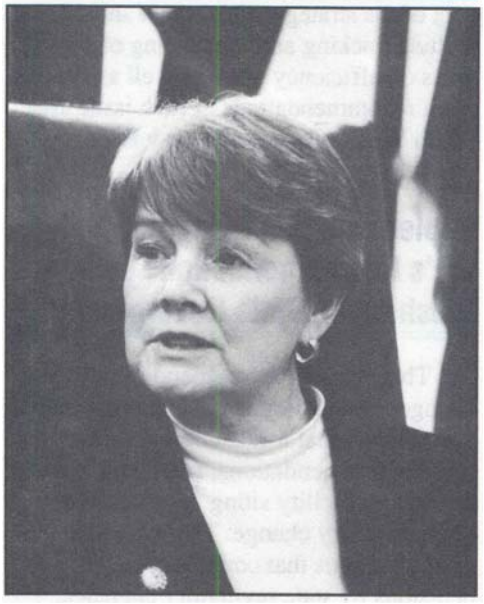
In delivering this strategy to the incoming governor and new legislature, the Committee recommends definitive action on its provisions. We propose that the governor, the legislature, and the state Transportation Commission act through executive policy decisions and legislative resolutions to formally adopt or amend this energy strategy. The Committee believes that the strategy proposed will serve the citizens of Washington well, but most importantly the Committee believes the state needs a clear, strong, and coherent energy strategy.

The Committee also recommends that the legislature and governor should review our recommendations for their fiscal impact and how their implementation can be funded. WSEO should review its current programs and prepare a budget reflecting the full scope of the agency's role outlined above. In developing this budget, WSEO should conduct a thorough review of existing resources and programs, align those programs with the strategy to the extent possible, and identify remaining costs that cannot be covered through existing resources or through reshaping of current activities.

Budget and Funding

Even with significant reshaping of existing efforts, it is clear to the Committee that the proposed tasks cannot be accomplished with the Energy Office's existing resources. The agency's federal oil funds, which support much non-electric work and public sector efficiency programs, are declining. State general fund support is very modest and has shrunk significantly over the last decade.

Washington's energy industry makes significant contributions to state government's revenues through utility and gasoline taxes. These exceed $500 million per year, an extremely small fraction of which, we believe, would cover all the planning and implementation needs identified in the strategy.



Committee member Wanda Haas.

At a time of great pressure on the state general fund budget, the Committee fully appreciates the difficulty of spending any additional state resources on the energy issue. However, statewide, we spend $9.2 billion on fossil fuels and electricity every year. While this is a substantial figure, it represents a per capita energy bill that is among the lowest in the nation. (Washington ranks 44th.) During the current decade private and public investments in energy resources, particularly in electricity resources, may be nearly as large as our annual energy costs. These investments are being made to keep our energy bill as low as possible, while maintaining a reliable supply of energy and minimizing effects on our environment and quality of life.

Careful planning and action on good information at a time when we are investing billions of dollars in the energy sector will lead to multimillion dollar savings and lower societal energy costs. Investment of additional state dollars to implement this strategy and to help improve the quality of the decision making process will be returned to the citizens of the state many times over.

The Committee feels that the success and cost effectiveness of these investments will depend in large measure on coordination and cooperation across the full range of energy users and providers. In the areas mentioned above, the Energy Office can play an important and legitimate role in enhancing coordination, cooperation, and efficiency.

Public Involvement in the Strategy

During the early meetings of the Energy Strategy Committee, the Committee realized that public involvement was very important. The Committee decided on a combination of large-scale distribution of the draft strategy, an extensive series of public meetings, and encouraging the public, associations, and businesses to submit written comments.

The Committee believed that the energy issues facing the state were so broad that they needed some definition and refinement before being taken to the public for comment. It was decided that the draft strategy would be printed in a tabloid format and distributed widely. The tabloid format had the advantage of low printing costs and easy accessibility to the reader. After its release, copies were requested by many other states, and by governments as far away as Guam and South Africa. The draft stimulated interest in the strategy and was a good public education tool. Sixteen thousand copies of the draft strategy were printed and nearly all have been distributed.

In order to make the public process an open one, the Committee decided to have a nonpartisan independent group manage the public meetings. The public meetings were held during the summer of 1992. They were managed by the League of Women Voters of Washington and were financed by a contract with the Washington State Energy Office, with matching funds contributed by companies, organizations, and individuals who worked on the energy strategy. The draft strategy was discussed at 14 public meetings during August and September. More than 500 people attended. Opinions were expressed during group discussions and then people were allowed to speak on any subject for a short period of time. During the meetings, people were encouraged to give additional thought to the issues and to write to the Committee and express their opinions in more detail. An extensive body of thoughtful material was sent in during and after the meetings. More than 100 letters from government agencies, businesses, associations and individuals were received and were considered during the Committee's deliberations.

Polls

During 1992, Energy Strategy Committee staff advised Elway Research Associates in designing a poll that asked several questions about energy. The questions were asked during the same time period the draft strategy was out for review.

The most important information to come from the survey is that the people of Washington State are not well informed about energy issues. Of all the people queried, only King County respondents believed there was an energy shortage. Sixty-one percent of those under 35 years of age believe there is a surplus. On the positive side, a large majority of those queried preferred a strategy that would favor conservation and regional electricity exchanges over the construction of new generating resources.

League of Women Voters Report

The League provided detailed summaries of each meeting. Their overall summary is appended to this report. Some general findings are appropriate to mention -here. These issues were discussed across the state in all regions and by many participants.

- Conservation was the most consistent theme. People wanted individual, commercial, and industrial efficiency and conservation to take place with natural gas as well as electricity.
- Energy education for consumers as well as for students from pre-school through university will be necessary for a strategy to succeed.
- Environmental costs should be included in least-cost plans.
- Natural gas is better used directly for space heat than for the generation of electricity.
- Provide natural gas service so consumers can choose, but beware of streamlining the siting process for new facilities. (People are wary of speeded-up permit processes.)
- People strongly support funding for the development of renewable energy resources.
- Take the bicycle seriously when making transportation plans.
- There was consistent support for a hefty gas tax to finance alternative transportation and road maintenance.

Areas of Controversy

Greenhouse gases were discussed by many people, but much confusion is evident. People, want better information.

Nuclear power was an issue of controversy. In the Elway Poll, 16 percent of the respondents wanted to "restart" the mothballed nuclear plants while 30 percent wanted to terminate them. Most poll respondents were on the fence. At the public meetings, there was a preponderance of sentiment to terminate the Power Supply System's unfinished reactors at Hanford and Satsop. There was some sentiment for continued mothballing and there were strong voices in the Trj-Cities and elsewhere in favor of finishing the plants.

Siting of energy facilities was discussed at every meeting. People recognize that some facilities will need to be sited in the near future, but feel uneasy about the siting process. There was strong sentiment for a powerful public and local voice in siting issues.

Letters

Another way of seeing what is on people's minds is to read the mail. Below is a list of the issues most mentioned in letters that came to the Committee during the public meetings and through December 1992. The numbers in parentheses represent the number of letters in which the topic was mentioned.

- Diversity in energy supply is needed. (27)
- Terminate Washington Nuclear Plants 1 & 3. (23)
- Stabilize or reduce greenhouse gases. (18)
- Revise energy codes and train code enforcement people. (18)
- Decouple utility rates and income and encourage efficiency. (14)
- Make transportation efficiency part of growth management planning. (13)
- Make tax policy and regulation consistent with the energy strategy. (13)
- Aluminum companies and direct service industries should pay their "fair share." (12)
- Energy conservation should be the centerpiece of the strategy. (12)
- DOT should encourage foot and bicycle alternatives. (11)

Conclusion

The single most important message to come from the strategy meetings and the other public input is that government and the energy industry must make strong efforts to involve the public in decision making at an early stage of any process. People are still wary because of the nuclear plant debacles of the 1970s. Serious efforts will have to be made to restore public confidence if we are to deal with our energy future in a rational and timely manner.

A. List of Presenters

During the 21 working meetings of the Energy Strategy Committee, many people from industry, government and interest groups were asked to make presentations before the Committee. These presentations were invaluable in developing the strategy. The Committee acknowledges the valuable help given by these individuals.

Don Aitken, Physicist, Union of Concerned Scientists	. Mark Anderson, Policy Specialist, Washington State Energy Office	Don Andre, Spokane Neighborhood Action Council
. Steve Aos, Research Consultant	Martin Baker, Metro	Amy Bell, Director, Washington State Energy Office
Gordon Bloomquist, Washington State Energy Office	Laurie Bodle, Co-Director, American Rivers	Robert A. Burco, Writer, Public Policy Analyst
Richard Byers, Washington State Energy Office	Ken Canon, Industrial Customers of Northwest Utilities	John Doyle, Assistant Secretary for Transit, Planning and Research, Washington Department of Transportation
Tom Eckman, Conservation Manager, Northwest Power Planning Council	David Engbert, Pacific Power and Light Company	Dan Evans, former governor and U.S. Senator
Allen Flksdal, Energy Facility Site Evaluation Council	Dwayne Foley, Senior Vice President, Northwest Natural Gas Company	Rich Gallagher, Association of Natural Gas Utilities
Don Gessel, Senior Vice President, Washington Natural Gas Company	Debbie Gordon, Union of Concerned Scientists	Jeroldine Hallberg, King County Planning and Community Development Division
Jim Harding, Assistant Director for Policy, Resources and Program Research, Washington State Energy Office	Denis Hayes, President, Bullitt Foundation	John Hendricks, Energy Manager, Boeing
Mary Ann Hutton, Executive Director, Northwest Industrial Gas Users	Bob Kahn, Consultant	Jim Kerstetter, Washington State Energy Office
Jeff King, Northwest Power Planning Council	Bruce Langmade, James River Corporation	Jim Lazar, Consulting Economist
Conway Leovy, Professor Atmospheric Sciences, Geophysics and Environmental Studies, University of Washington	Mike McSorley, Assistant Director for Transportation and Residential Division, Washington State Energy Office	Max Power, Washington Department of Ecology
Greg Prekeges, Washington Water Power Company	Alan Scott, Transportation Operations Manager, Utilities and Transportation Commission	Noel Shelton, Intalco Aluminum
Ron Shipley, Pierce Transit	Jack Speer, Power Manager for Alcoa, representing Direct Service Industries	Shanl Taha, Seattle City Light
Grant Tanner, Washington Industrial Committee for Fair Utility Rates	Brian Thomas, Puget Power and Light Company	Carl Van Hoff, Regional Planning Manager, Washington Power Supply System
Dick Watson, former Director, Washington State Energy Office	Ernie Westman, Manager, Centralia Generating Station	David White, Manager of Market Development, Northwest Pipeline Company
Jay Willenberg, Washington Department of Ecology	Rusty Williams, Boeing	Jason Zeller, Energy Facility Site Evaluation Council

League of Women Voters

Summary of Public Meetings

DRAFT ENERGY STRATEGY

PUBLIC INVOLVEMENT MEETINGS

FINAL REPORT

October 9, 1992

Lucy Copass
Connie Niva
Project Coordinators
League of Women Voters
of Washington
1411 Fourth Avenue
Seattle, WA 98101

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BACKGROUND

Energy is one of the key factors that defines economic development, the environment, and the quality of life we enjoy in the state of Washington. Due to population growth, our surplus of low-cost electrical energy has disappeared. Therefore, in 1991, Governor Gardner appointed the Washington Energy Strategy Committee to examine the state's energy picture, identify problems and opportunities, and recommend a course of action. The 20-member committee, which represented government, citizens, utilities, and business, met regularly for nine months. A draft version of the Washington Energy Strategy resulted from these efforts.

The committee asked the League of Women Voters. to take the strategy "on the road" to 14 communities (Seattle, Vancouver, Oak Harbor, Bellingham, Everett, Olympia, Port Angeles, Wenatchee, Spokane, Tacoma, Bellevue, Hoquiam, Tri-Cities, and Yakima) across Washington during the months of August and September of 1992. The people of Washington were invited to attend the meetings convened by the League and tell the committee how they felt about Washington's energy future, where they agreed or disagreed with the draft Strategy, and what other issues needed to be addressed.

Attendance at each public meeting varied from 20 to 100 participants depending on the weather, conflicting events, and awareness of specific energy issues in the individual community. Local leagues and the Washington State Energy Office worked diligently with the media to get word of the meetings to all sectors of the public. However, there is little question that the "man/woman on the street" was not typically in attendance. The participants tended to be sophisticated concerning energy issues, articulate, and very interested in the subject matter. Most meetings were well attended by representatives of the energy industry and utilities. Some meetings also had noticeable participation by members of environmental groups.

The format for each meeting featured small-group discussions facilitated by League members. Major points made in the small-group discussions were recorded and reported back to the audience as a whole. Individual participants also had the opportunity to personally address Energy Strategy Committee members and the audience with brief remarks just before the close of each meeting. Participants were also encouraged to send any additional written comments to the Washington State Energy Office.

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EMERGING THEMES

Detailed reports of comments from each meeting were prepared by League project coordinators. As the meetings progressed, it soon became apparent that general themes of agreement emerged and were repeated state-wide regardless of region or type of participant

- Conservation was the most consistent theme. Participants were aware of the power of this strategy and had considerable discussion of the need for changing life styles including elements from the automobile to home heating. There was also a strong belief that the commercial and industrial sectors need to share in this effort to conserve and use energy more efficiently.
- Education was cited as a critical element in the public's ability to conserve as well as to be made aware of the problems and costs involved in energy decision-making. This education should begin as early as pre-school and, at the same time, not be limited just to children. All citizens and businesses need more information.
- Least cost planning should include environmental costs. This was a new concept for some participants, but once understood it was almost always embraced. It seemed to make sense to understand at the front-end the costs of a project as opposed to paying later in unanticipated ways.
- Natural gas should be used directly, not burned to create electricity. The public indicated that since this is the case, conservation standards should also be applied to residential and commercial gas use, thus leveling the playing field of gas and electricity. The comment was made that "just because we have abused one energy source, it doesn't mean we should abuse another."
- Barriers to gas use should be reduced, but not at the expense of the environment. The participants wanted to see gas more available to residential use as an energy choice but regulations should not be abandoned "willy-nilly" allowing pipelines to plow through sensitive areas and ruin landscapes. Beware, they suggested, of the term "streamlining."
- Renewable energy sources and funding for their development were strongly supported. Participants wanted to see investment in alternatives, especially solar, occurring today rather than waiting until crisis.
- The bicycle should be considered as a serious commuter option. Businesses ought to provide changing rooms and storage facilities for bicycles; decision makers must be willing to fund bike paths and safe road shoulders in their transportation programs.

- Incentives received consistent approval over disincentives, except for substantial support for imposition of a hefty gas tax. A gas tax was seen as a deterrent to automobile use and, at the same time, as a revenue source for mass transit and the external costs of operating a car.
- Increased use of rail to transport goods was also a common theme, as well as commuter rail. There was consistent interest in preserving rail right of ways and a renewed look at this mode of transportation.

CONTROVERSIAL ISSUES

- **Greenhouse Gases**. A significant number of participants expressed uncertainty about the meaning and implications of options for dealing with greenhouse gas emissions offered in the draft Strategy. They cited a particular need for clarification about the "no regrets" policy recommended by the National Academy of Sciences. (Option 2) which is not explicitly defined in either the action agenda or the text. Some who overcame their confusion and spoke to this issue wanted the "best possible emissions reduction." Others wanted the problem and possible solutions better quantified or wanted some acknowledgement that uncertainty on this subject exists within the scientific community. It was also noted that the" state can't do it alone"--state policy must be part of a coordinated federal approach.
- **Nuclear power.** Polarization of opinion on this touchy option continues. There a very strong (but not universal) sentiment expressed for termination the nuclear power plants that are presently mothballed ('Kill WPPSS #1 and #3"), and some sentiment for continued mothballing. There were many voices in the Tri-Cities (and single voices elsewhere) making the point that nuclear power contrasts favorably with other technologies is being "ready to go," less polluting than fossil fuels, and possibly easier on the ratepayer. Some called for initiatives to use the mothballed facilities in creative new ways, possibly as industrial sites, and to "make a bad investment into a good one."
- **Siting.** While there seems to be strong agreement that energy facility siting processes are in great need of revision (at least one participant labeled the current system "dysfunctional ") there was not clear agreement on how to improve it. Many participants advocated a system that would encourage smaller energy-producing facilities scattered geographically, and/or expressed the view that every part of the state should take its "fair share." Most were concerned with retaining a meaningful local voice in siting decisions. A few said just the opposite~ the governor or some other authority should be empowered to override local NIMBY -ism. Whatever the state

does about the siting process, it should "not add bureaucracy."

- **Cogeneration**. Some saw this as highly desirable because of its presumed efficiency. They particularly supported the use of waste heat. Others (most notably in the Bellingham area) expressed skepticism about the efficiency of cogeneration compared to other options, or pointed to problems it engendered, such as the need for new transmission lines.

NEW OR EXPANDED STRATEGY ITEMS

Almost every idea raised by participants had been mentioned, at least in passing, somewhere in the draft Strategy. (There is little that is truly new "under the sun"—or anywhere else in energy planning!) However, some ideas offered at the meetings differed from those put forth in the draft Strategy by having greater specificity, greater depth, or simply some new twist.

- **Building construction that enables hookups to gas as well as electricity** should be required by building codes in areas where gas availability is any sort of possibility.
- **Cooperation and/or joint planning between all utilities--**gas and electric, public and private. (The public seem to have little awareness of, or concern for, the distinctions between these entities, and retaining those distinctions doesn't seem to be important--especially if it impedes efficiency or cost-effective conservation).
- **Direct-service industries (DSI'S).** There is a sense that subsidized rates to these industries are inequitable or outmoded, and that greater efficiencies in these industries could be encouraged. (One speaker noted, for example, that aluminum can recycling ought to be having an impact on the need for energy consumption by aluminum producers.)
- **Growth Management** plans should deal specifically with the concept of energy conservation. They should result in land use patterns in which people can live closer to work and can move throughout their communities safely and easily by bicycle or on foot.
- **Emissions testing** should be required for all vehicles, rather than be dependent on the region where the vehicle is registered.
- **Excise taxes on vehicles should be based on a "two tiered" or "fee-bate"** principle that rewards energy efficiency, rather than just rewarding a low purchase price or value.
- **Groups such as CARES should receive support** for work to accelerate conservation and renewable energy projects.

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- **Governments at all levels should set an example**--with fuel-efficient vehicles and facilities that are a model for energy conservation.

Additional ideas can be found in the reports from each meeting and in the written comments.

A FINAL COMMENT

People are asking for leadership. Participants from all parts of the state expressed the view that if people are educated about the "right" things to do, they will do them. This summer's experience in the Puget Sound region with water conservation was cited as evidence that consumers can meet targeted goals, provided they get good direction. Citizens don't want to see barriers to the efficient use of energy. They expressed some concern that current utility structures and state regulatory practices could be standing in the way of sound energy practices, rather than fostering them. The forecasting of future energy shortages was also viewed, in some cases, with a certain skepticism.

In spite of such skepticism, there was strong statewide support for the concept that the State of Washington should formulate and adopt an energy strategy. In addition, the reports from the 14 public involvement meetings clearly indicate that participants also endorse a majority of the action items in the draft Strategy.

The public outreach effort on the draft Energy Strategy, in contrast to many public involvement processes, was a sincere attempt to gather public input at a time when that input could be heard with an open mind and used in a meaningful way. The public generally appeared to understand and appreciate this. Participants at every meeting expressed thanks to the Energy Strategy Committee and to the League for bringing energy issues before them and giving them an opportunity to respond.

C. State Energy Policy

Chapter 201 of Engrossed Substitute Senate Bill 5245

CHAPTER 201
[Engrossed Substitute Senate 8iI1 5245J
STATE ENERGY POLICY
Effective Date: 7/28/91

AN ACT Relating to state energy policy; amending RCW 39.35.030 and 43.88.195; amending 1989 1st ex.s. c 12 s 301 (uncodified); adding a new section to chapter 43.21 F RCW; adding new sections to chapter 39.35 RCW; adding a new chapter to Title 39 RCW; adding a new section to Title *28A* RCW; creating a new section; and repealing 1982 c 159 s 6 (uncodified).

Be it enacted by the Legislature of the State of Washington:

NEW SECTION. Sec. l. A new section is added to chapter 43.21 F RCW to read as follows:

DEVELOPMENT OF STATE ENERGY STRATEGY. (I) The state energy office shall develop a state energy strategy under the guidance of an advisory committee. The advisory committee shall include twenty members and represent different regions of the state, including fifteen citizens appointed by the governor from the following groups: One person recommended by the investor-owned electric utilities, one person recommended by the investor-owned natural gas utilities, one person employed by or recommended by a natural gas pipeline serving the state, one person recommended by the suppliers of petroleum products, one person recommended by municipally owned electric utilities, one person recommended by the public utility districts, one person recommended by industrial energy users. one person recommended by commercial energy users. one person recommended by agricultural energy users. one person recommended by the association of Washington cities, one person recommended by the Washington association of counties, two persons recommended by civic organizauons. and two persons recommended by environmental organizations. In addition, the advisory committee shall include one of the representatives of the state of Washington to the Pacific Northwest electric power and conservation planning council selected by the governor: the chair of the energy facility site evaluation council: one member of the utilities and transportation commission selected by the chair of the commission: one member of the house of representatives selected by the speaker of the house of representatives:

and one member of the senate selected by the majority leader of the senate. The chair of the advisory committee will be appointed by the governor from citizen members. The director may establish technical advisory groups as necessary to assist in the development of the strategy. The director shall provide for extensive public involvement throughout the development of the strategy.

(2) The state energy strategy shall consider all forms of energy and each major sector of energy consumption and shall:

(a) Assess future needs of the state and future resources available for use in the state for each form of energy;

(b) Identify measures to assist in maintaining adequate, reliable, secure, economic, and environmentally acceptable supplies;

(c) Identify and, to the extent possible. quantify the costs and benefits of energy alternatives including direct economic costs and benefits, environmental costs and benefits. and the costs of inadequate or unreliable energy supplies;

(d) Develop a framework in which public decisions and actions affecting energy supply and use can be evaluated including the impact of decisions in other areas of public policy on energy supply and cost and on the use of energy and the establishment of goals to guide energy-related decisions;

(e) Evaluate the future role of the state energy office and means of financing those activities determined essential to that role; and

(f) Recommend energy goals and policies to the governor and the legislature.

(3) In developing the state energy strategy, the state energy office shall:

(a) Ensure that the information developed is objective and impartial and facilitates the effective and efficient operation of such energy markets as may exist and recognizes and conforms to the pattern of regulation governing public service companies but shall not mandate the use of one energy source over another;

(b) Draw upon existing public and private sector information and expertise in energy matters to the fullest extent possible through consultation and cooperation;

(c) Recognize the planning horizons required for each segment of the energy industry and the need for state actions and decisions to take those planning horizons into consideration; and

(d) Ensure that the strategy is coordinated with the energy planning activities of federal. state, and private entities and does not duplicate what is already available.

(4) The energy office shall provide a progress report to the house of representatives and senate committees on energy and utilities in January 1992. A final report shall be provided to the governor and the legislature by December 1, 1992.